

Final Five-Year Review of Record of Decision

Bremerton Naval Complex
Bremerton, Washington

Delivery Order 0017

October 2002

ARCHITECT-ENGINEERING SERVICES ENVIRONMENTAL RESTORATION PROJECTS

**ENGINEERING FIELD ACTIVITY
NORTHWEST, NAVAL FACILITIES
ENGINEERING COMMAND**

CONTRACT NO: N44255-00-D-2476



THE URS TEAM

URS Group, Inc.

White Shield, Inc.

Boateng & Associates

Fisher & Associates, LLC

EnviroIssues

Ballard & Associates

Christianson Communications

Grady & Associates

EXECUTIVE SUMMARY

As lead agency for environmental cleanup of the Bremerton Naval Complex, the U.S. Navy has completed a 5-year review of remedial actions, conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300). The purpose of this 5-year review is to ensure that the remedial actions selected in the Records of Decision (RODs) for operable units (OUs) within the complex remain protective of human health and the environment. A 5-year review is required for this site because the remedies allow contaminants to remain in place at concentrations that do not allow unlimited site use and unrestricted exposure. This 5-year review was prepared in accordance with *Navy/Marine Corps Policy for Conducting Environmental Response, Compensation, and Liability Act (CERCLA) Statutory Five-Year Reviews*, November 2001, and the U.S. Environmental Protection Agency's *Comprehensive Five-Year Review Guidance* (OSWER 9355.7-03B-P, June 2001).

The remedies for OU NSC and OU A are protective of human health and the environment in the short term. Follow-through on several recommendations identified during the 5-year review is needed for these remedies to be considered protective in the long term. The remedy for OU B marine will be protective once the issue of chemical contamination in surface sediments in the vicinity of the confined aquatic disposal pit has been addressed and the remedy is thus complete.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name (from WasteLAN): Puget Sound Naval Shipyard Complex

EPA ID (from WasteLAN): WA2170023418

Region: 10 **State:** WA **City/County:** Kitsap

SITE STATUS

NPL status: Final ☒ Deleted Other (specify) _____

Remediation status (choose all that apply): Under Construction ☒ Operating ☒ Complete ☒

Multiple OUs?* YES ☒ NO **Construction completion date:** ____/____/____

Has site been put into reuse? YES NO ☒

REVIEW STATUS

Lead agency: EPA State Tribe Other Federal Agency: Navy

Author name: Thomas Hughes

Author title: Remedial Project Manager **Author affiliation:** Engineering Field Activity NW, Navy

Review period:** 02/04/02 to 08/02/02

Date(s) of site inspection: 04/30/02

Type of review:

Post-SARA <input checked="" type="checkbox"/>	Pre-SARA	NPL-Removal only
Non-NPL Remedial Action Site		NPL State/Tribe-lead
Regional Discretion		

Review number: 1 (first) ☒ 2 (second) 3 (third) Other (specify) _____

Triggering action:

Actual RA Onsite Construction at OU# _____	Actual RA Start at OU <u>NSC</u>
Construction Completion	Previous Five-Year Review Report
Other (specify): _____	

Triggering action date (from WasteLAN): 06/18/1997

Due date (five years after triggering action date): 06/18/2002 (extension of due date approved by EPA Region 10 to allow evaluation of spring 2002 groundwater sampling results)

*["OU" refers to operable unit.]

**[Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form (Cont'd)

Issues:

- Lack of an excavation management plan
- Lack of an OU NSC storm drain maintenance plan
- Limitations in the implementation and documentation of institutional controls for OUs NSC and A

Recommendations and Follow-up Actions:

- Finalize and fully implement several plans (petroleum, excavation, and storm drain maintenance plans and a land use control plan)
- Complete and implement operations and maintenance plan (including provisions for needed remedy repairs)
- Consider alternative methods to provide further opportunities for public participation in remedial action program
- Address contamination in surface sediment in vicinity of confined aquatic disposal pit
- Complete the long-term monitoring plan for OU B marine

Protectiveness Statement(s):

The remedies for OU NSC and OU A are protective of human health and the environment in the short term. Follow-through on the recommendations summarized above is needed for these remedies to be considered protective in the long term. The remedy for OU B marine will be protective once the remedy is complete.

Other Comments:

**FINAL
FIVE-YEAR REVIEW OF RECORD OF DECISION
BREMERTON NAVAL COMPLEX
BREMERTON, WASHINGTON**

**Prepared by
URS Group, Inc.
Seattle, Washington**

**Prepared for
Engineering Field Activity, Northwest
Southwest Division, Naval Facilities Engineering Command
Poulsbo, Washington**

**U.S. Navy Contract No. N44255-00-D-2476
Delivery Order 0017**

October 17, 2002

FINAL FIVE-YEAR REVIEW OF RECORD OF DECISION
BREMERTON NAVAL COMPLEX
U.S. Navy, Engineering Field Activity, Northwest
Contract No. N44255-00-D-2476
Delivery Order 0017

Document ID
Revision No.: 0
Date: 10/17/02
Page vii

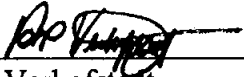
DOCUMENT IDENTIFICATION

Document Title:	Final Five-Year Review of Record of Decision
Site Name/Location:	Bremerton Naval Complex, Bremerton, Washington
Delivery Order No.:	0017
Document Control No.:	0702.515 53F0074100.17.R-3
Report Coverage:	This document reports the results of the first 5-year review of remedial action implementation following the signing of the Record of Decision on December 13, 1996. This document was prepared under U.S. Navy Contract No. N44255-00-D-2476 for Engineering Field Activity, Northwest, of the Southwest Division, Naval Facilities Engineering Command. These services were provided by URS Group, Inc. (URS).
Organization Title: Address:	Engineering Field Activity, Northwest Naval Facilities Engineering Command 19917 Seventh Avenue N.E. Poulsbo, Washington 98370-7570 (360) 396-0012
Prime Contractor: Address:	URS Group, Inc. 1501 Fourth Avenue, Suite 1400 Seattle, Washington 98101 (206) 438-2700
Navy Remedial Project Manager:	Thomas A. Hughes, P.E.
URS Program Manager:	William L. Rohrer, C.P.G., P.G., L.H.G.
URS Project Manager:	Paul A. Johanson, P.E.

FINAL FIVE-YEAR REVIEW OF RECORD OF DECISION
BREMERTON NAVAL COMPLEX
U.S. Navy, Engineering Field Activity, Northwest
Contract No. N44255-00-D-2476
Delivery Order 0017

Document ID
Revision No.: 0
Date: 10/17/02
Page viii

Signature sheet for the Bremerton Naval Complex Five-Year Review of Record of Decision report.



A.P. Verhofstadt
Captain
Civil Engineer Corps, USN
Commanding Officer

31 OCT 02


Date




UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

BREMERTON NAVAL COMPLEX FIVE YEAR REVIEW
(aka Puget Sound Naval Shipyard)
October 2002

EPA concurs with the findings and recommendations in the Navy's Five Year Review for the Bremerton Naval Complex.


Michael F. Gearheard, Director *for*
Environmental Cleanup Office


Date

CONTENTS

ABBREVIATIONS AND ACRONYMS	xiii
1.0 INTRODUCTION	1-1
2.0 BACKGROUND	2-1
2.1 PHYSICAL CHARACTERISTICS.....	2-1
2.2 LAND AND RESOURCE USE	2-1
2.3 HISTORY OF CONTAMINATION	2-2
3.0 OPERABLE UNIT DESCRIPTION AND REMEDIAL ACTION OBJECTIVES	3-1
3.1 OU NSC	3-1
3.1.1 Description of OU NSC	3-1
3.1.2 Remedial Action Objectives for OU NSC	3-2
3.1.3 Chronology of Events for OU NSC	3-2
3.2 OU A	3-3
3.2.1 Description of OU A	3-3
3.2.2 Remedial Action Objectives for OU A	3-4
3.2.3 Chronology of Events for OU A	3-5
3.3 OU B MARINE	3-6
3.3.1 Description of OU B Marine.....	3-6
3.3.2 Remedial Action Objectives for OU B Marine.....	3-6
3.3.3 Chronology of Events for OU B Marine.....	3-8
3.4 OU B TERRESTRIAL	3-8
3.4.1 Description of OU B Terrestrial	3-8
3.4.2 Preliminary RAO Summary for OU B Terrestrial.....	3-9
3.5 OU C	3-10
3.5.1 Description of OU C	3-10
3.5.2 Chronology of Events for OU C	3-10
4.0 REMEDIAL ACTIONS.....	4-1
4.1 OU NSC	4-1
4.1.1 Selected Remedy for OU NSC	4-1
4.1.2 Implementation of OU NSC Remedy	4-1
4.2 OU A	4-3
4.2.1 Selected Remedy for OU A	4-3
4.2.2 Implementation of OU A Remedy	4-4

4.3	OU B MARINE	4-5
4.3.1	Selected Remedy for OU B Marine	4-5
4.3.2	Implementation of OU B Marine Remedy.....	4-6
4.4	OU B TERRESTRIAL	4-6
4.5	OU C	4-7
5.0	REVIEW OF FINDINGS	5-1
5.1	FIVE-YEAR REVIEW TEAM.....	5-1
5.2	RESULTS OF DOCUMENT REVIEW	5-1
5.2.1	Physical Construction Components of the Remedies	5-2
5.2.2	Management Plans and Institutional Controls	5-3
5.2.3	Monitoring	5-4
5.3	RESULTS OF SITE INSPECTION	5-7
5.4	RESULTS OF INTERVIEWS.....	5-8
5.4.1	Navy Personnel	5-8
5.4.2	Agency Personnel	5-10
5.4.3	Suquamish Tribe	5-10
5.4.4	Community	5-11
5.5	COMMUNITY INVOLVEMENT	5-11
5.5.1	History of Community Involvement.....	5-11
5.5.2	Community Involvement During 5-Year Review.....	5-12
6.0	TECHNICAL ASSESSMENT	6-1
6.1	FUNCTIONALITY OF REMEDY	6-1
6.1.1	Functionality of Remedy for OU NSC	6-1
6.1.2	Functionality of Remedy for OU A	6-2
6.1.3	Functionality of Remedy for OU B Marine.....	6-3
6.2	CONTINUED VALIDITY OF ROD ASSUMPTIONS.....	6-4
6.2.1	Review of ARARs	6-4
6.2.2	Review of Risk Assessment Assumptions.....	6-6
6.3	PROGRESS TOWARDS MEETING REMEDIAL ACTION OBJECTIVES ...	6-7
6.4	NEW INFORMATION	6-8
6.5	TECHNICAL ASSESSMENT SUMMARY	6-8
6.6	ISSUES	6-9

FINAL FIVE-YEAR REVIEW OF RECORD OF DECISION
BREMERTON NAVAL COMPLEX
U.S. Navy, Engineering Field Activity, Northwest
Contract No. N44255-00-D-2476
Delivery Order 0017

Contents
Revision No.: 0
Date: 10/17/02
Page xi

7.0 RECOMMENDATIONS AND FOLLOWUP ACTIONS	7-1
8.0 CERTIFICATION OF PROTECTIVENESS	8-1
9.0 NEXT REVIEW	9-1
10.0 REFERENCES	10-1

APPENDICES

- B Contaminant Trend Graphs
- C Site Inspection Forms
- D Interview Responses

FIGURES

1-1	Bremerton Naval Complex Vicinity Map.....	1-3
1-2	Bremerton Naval Complex Operable Units.....	1-4
3-1	Site Locations.....	3-7

TABLES

3-1	Chronology of Site Events for OU NSC.....	3-2
3-2	Chronology of Site Events for OU A.....	3-5
3-3	Chronology of Site Events for OU B Marine	3-8
3-4	Chronology of Site Events for OU B Terrestrial	3-9
3-5	Chronology of Site Events for OU C.....	3-11
5-1	Monitoring Reports Summary	5-5
6-1	Issues.....	6-9
7-1	Recommendations and Follow-up Actions.....	7-1

ABBREVIATIONS AND ACRONYMS

ARAR	applicable or relevant and appropriate requirement
AST	aboveground storage tank
bgs	below ground surface
BMP	best management practice
BNC	Bremerton Naval Complex
CAD	confined aquatic disposal
CAP	corrective action plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CIP	community involvement plan
CLARC	Cleanup Levels and Risk Calculations
cm/sec	centimeter per second
COC	chemical of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
DRMO	Defense Utilization Marketing Office
Ecology	Washington State Department of Ecology
EFA NW	Engineering Field Activity, Northwest
EPA	U.S. Environmental Protection Agency
FISC	Fleet and Industrial Supply Center
FS	feasibility study
IR	Installation Restoration
LUC	land use control
LUCP	land use control plan
MCUL	minimum cleanup level
µg/L	microgram per liter
mg/kg	milligram per kilogram
msl	mean sea level
MTCA	Model Toxics Control Act
Navy	U.S. Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NSC	Naval Supply Center

OSWER	Office of Solid Waste and Emergency Response
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PSNS	Puget Sound Naval Shipyard
PSNY	Puget Sound Naval Yard
RAB	Restoration Advisory Board
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
SVOC	semivolatile organic compound
TAPP	Technical Assistance for Public Participation
TBC	to be considered
TEF	toxicity equivalency factor
TPH	total petroleum hydrocarbons
TRC	Technical Review Committee
TTEC	total toxicity equivalent concentration
UST	underground storage tank
WAC	Washington Administrative Code
WWI	World War I
WWII	World War II

1.0 INTRODUCTION

This report presents the results of a 5-year review performed for the Puget Sound Naval Shipyard Complex National Priorities List (NPL) site, more commonly known as the Bremerton Naval Complex (BNC). The purpose of 5-year reviews is to determine whether the remedies selected for implementation in the Records of Decision (RODs) for a site are protective of human health and the environment. The methods, findings, and conclusions of 5-year reviews are documented in 5-year review reports, which identify any issues found during the review and recommendations to address them.

The U.S. Navy, the lead agency for the BNC, is preparing this 5-year review pursuant to CERCLA Section 121 and the National Contingency Plan (NCP, 40 CFR Part 300). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The U.S. Navy's Engineering Field Activity Northwest (EFA NW) has conducted a 5-year review of the remedial actions implemented at the BNC in Bremerton, Washington. This review was conducted from February 2002 through October 2002. This report documents the results of the review. The URS Group, Inc. performed the review, including a site inspection, and prepared this report documenting the results of the review on behalf of the Navy under contract number N44255-00-D-2476.

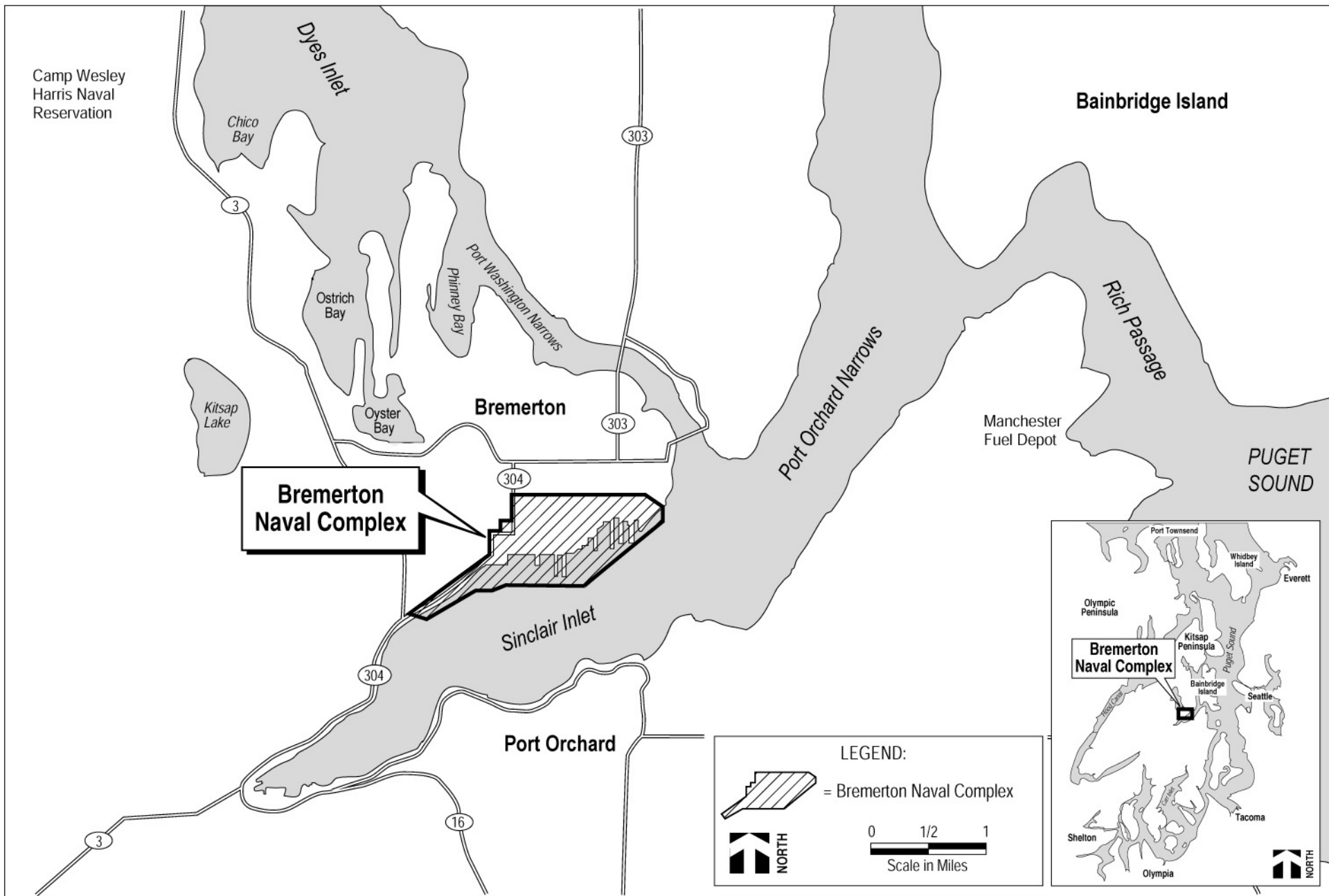
There are a total of six operable units (OUs) at the BNC (Figures 1-1 and 1-2). This report covers the remedies selected in the signed RODs for OU A, OU NSC, and OU B marine (U.S. Navy, Ecology, and USEPA 1996a, 1996b, 2000). The progress toward a ROD for OU B terrestrial is also summarized in this report. OU C is a petroleum-contaminated site. CERCLA does not address petroleum as a contaminant. Petroleum releases are addressed, in Washington State, under Subchapter IX of the Resource Conservation and Recovery Act (RCRA) and the State's Model Toxics Control Act (MTCA). OU C is included in this CERCLA 5-year review in order to address the parallel MTCA review requirements. A portion of the original OU B

terrestrial adjacent to the state ferry terminal was removed from OU B terrestrial in August 2002 and was designated OU D. The Navy is evaluating the potential for transfer of a portion of this area to the City of Bremerton for future recreational use. OU D is not addressed further in this report.

This is the first 5-year review for the BNC site. The triggering action for this review was the initiation of the first remedial action at OU NSC, which began in June 1997, as recorded in the EPA CERCLIS/WasteLAN database. Contaminants have been left at the BNC above levels that allow for unlimited use and unrestricted exposure.

The RODs documenting the remedies implemented at the BNC were signed after October 17, 1986. Therefore, this is considered a statutory, rather than a policy, review. With the concurrence of EPA, delivery of the 5-year review was delayed several months to allow the results of spring 2002 groundwater sampling to be included in the analysis.

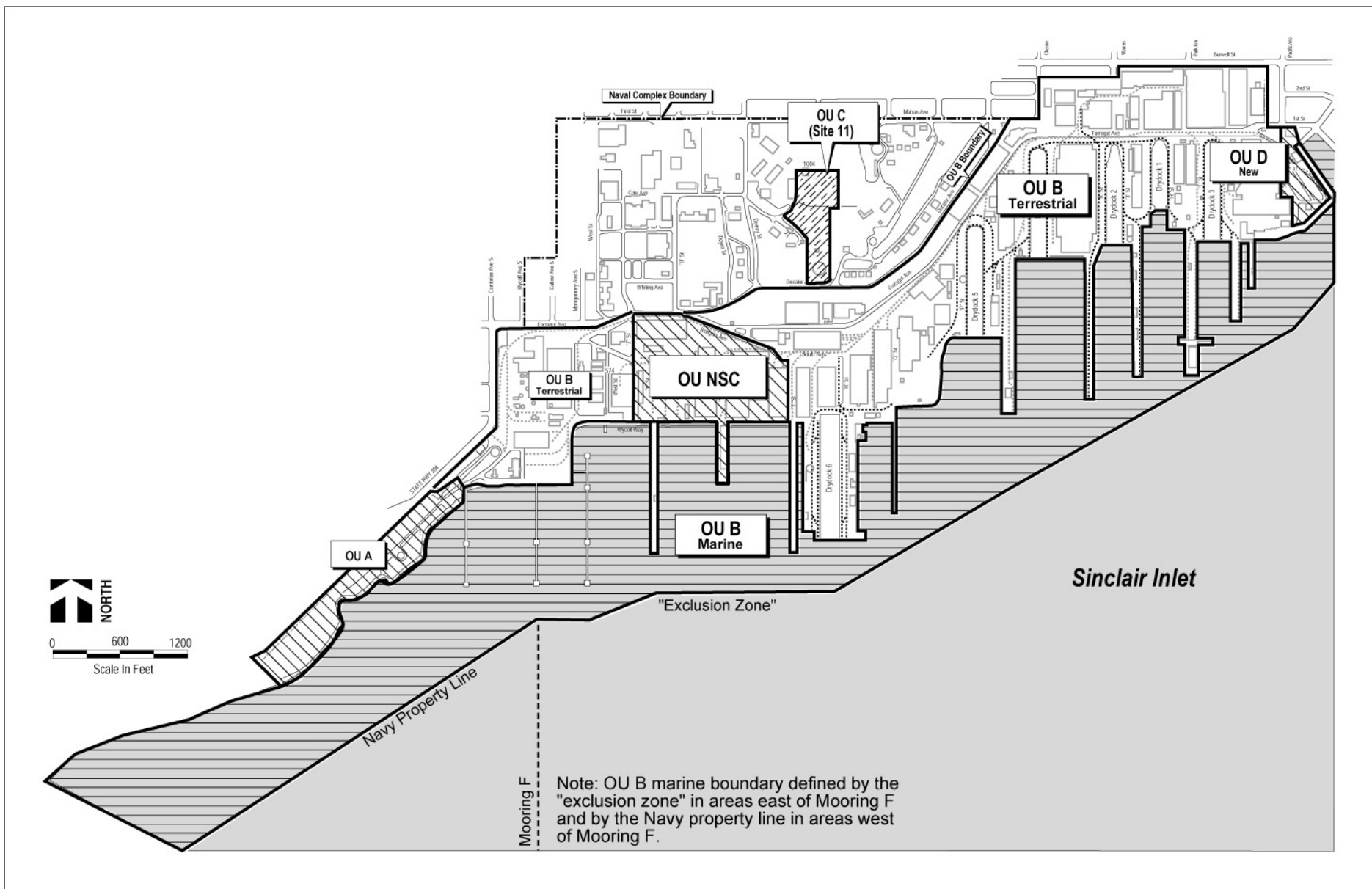
This report was prepared as part of the CERCLA 5-year review process using Navy and EPA guidance.



U.S.NAVY

Delivery Order 0017
Bremerton Naval Complex
FIVE-YEAR REVIEW

Figure 1-1
Bremerton Naval Complex Vicinity Map



U.S.NAVY

Delivery Order 0017
Bremerton Naval Complex
FIVE-YEAR REVIEW

Figure 1-2
Bremerton Naval Complex Operable Units

2.0 BACKGROUND

This section presents a brief summary of land and resource use, physical characteristics, and history of contamination on a sitewide basis. The related topics of initial responses to findings of contamination and the basis for taking action are presented in Section 3, organized on the basis of the individual operable units into which the site has been divided for purposes of remedial investigation and cleanup.

2.1 PHYSICAL CHARACTERISTICS

The site is located on Sinclair Inlet, in the southwest region of Puget Sound. It is surrounded to the west and north by the City of Bremerton's commercial and residential areas, to the northeast by a Washington State Ferries terminal, and to the southeast by Sinclair Inlet. The site contains approximately 380 acres of upland area and 270 acres of submerged land. The Navy also owns approximately 1,000 acres of railroad area that is contiguous with the rest of the site, but is not emphasized because none of this property is included in the OUs. The upland portion of the site consists of a relatively flat low-lying waterfront area created through gradual filling of tideland and marshes and a higher hillside area separated from the waterfront area by a moderately steep escarpment.

The upland portion of the site has been used for industrial purposes for over 100 years, and the City of Bremerton has surrounded the site for this entire time. The city's population is now roughly 39,000 persons. Sensitive species of marine fish, shellfish, and wildlife species live or pass through the waters of the adjacent Inlet, which is part of the "usual and accustomed" fishing areas of the Suquamish Tribe.

2.2 LAND AND RESOURCE USE

The site area was first used as a resource base and seasonal camp location for the ancestors of the present-day Suquamish Tribe. The land was visited by Euroamerican explorers and settled by whites in the 1700s and 1800s. In 1891, the Navy purchased 190 acres of land on Sinclair Inlet for construction of a ship drydocking, repair, and overhaul base. The base area was expanded significantly beginning in the early 1900s by upland filling with soils, dredged sediments, and construction debris.

In over 110 years of operation, the BNC has employed the following land uses:

- Heavy industry (shipbuilding, ship maintenance and repair, ship conversion)
- Light industry (vehicle maintenance, etc.)
- Ship berthing/homeporting
- Commercial (providing for purchase of supplies, meals, etc.)
- Residential (officers' and other quarters)

Current land use is much the same as it was historically. Ships have not been constructed at the BNC since the early 1970s. Instead, the shipyard engages in ship and submarine maintenance, modernization, repair, inactivation and recycling, and technical and logistics support. BNC facilities include 6 major piers, 6 large drydocks, and more than 100 major buildings.

Land use in the vicinity of the BNC currently consists of commercial and residential districts of the City of Bremerton and, to the northeast, water transportation (Washington State Ferries terminal).

Groundwater at the BNC has not historically been, nor is it expected in the future to be a source of drinking water. The overall groundwater-flow direction at BNC is toward the drydocks and Sinclair Inlet; however, near the shoreline, the direction of groundwater flow reverses with the tides. There are no perennial streams or freshwater bodies within the BNC boundaries.

2.3 HISTORY OF CONTAMINATION

The industrialized waterfront at the BNC was constructed through placement of miscellaneous fill materials. Some of this fill is believed to have included wastes containing hazardous substances. The complex has been the site of substantial shipbuilding, ship repair and overhaul, and other fleet support services. Miscellaneous waste materials have been a normal byproduct of shipyard industrial activities since the early 1900s. Before the establishment of environmental regulations, some wastes were disposed of at the BNC using practices considered acceptable at the time, but which later were found to have resulted in chemical contamination of soil and groundwater. The waste materials reportedly have included metal plating wastes, metal filings and shavings, transformers and other electrical components containing polychlorinated biphenyls (PCBs), batteries, acids, oxidizing materials, paint and paint chips, degreasing and cleaning solvents, miscellaneous materials from shipbuilding and ship demolition, and petroleum products. Disposal of wastes, particularly in conjunction with the placement of fill during shipyard expansion, as well as spills and leaks of industrial materials, has led to elevated levels of various chemicals in the subsurface.

3.0 OPERABLE UNIT DESCRIPTION AND REMEDIAL ACTION OBJECTIVES

Previous Navy investigations identified several OUs at BNC that warranted inclusion in the CERCLA remedial investigation/feasibility study (RI/FS) and ROD process. This section provides a brief description of each of these OUs: OU NSC, OU A, OU B, and OU C.

3.1 OU NSC

3.1.1 Description of OU NSC

OU NSC is the designation given to the portion of BNC now known as the Fleet and Industrial Supply Center (FISC). When the RI process for BNC was being planned, FISC was known as the Naval Supply Center (NSC), thus the designation "OU NSC."

The land area of OU NSC is approximately 28 acres created between 1900 and 1950 by the placement of miscellaneous fill materials in tidelands. The current ground surface at OU NSC is flat and almost entirely paved or covered by buildings, except during active construction. OU NSC encompasses a substantial number of relatively old structures, including buildings and a former supply pier. Because of FISC's role in supplying materials to BNC, the buildings within OU NSC are primarily warehouses and offices for staff involved in supply functions.

A concrete and steel quay wall reaching to an estimated depth of 10 feet below ground surface extends along the full length of the waterfront at OU NSC. The quay wall was apparently installed in stages during the landfilling process, presumably to help control erosion of the fill by tidal action.

Until October 1996, the Defense Reutilization Marketing Office (DRMO) operated a metal scrap yard on approximately 3 acres of land within the OU NSC boundaries. DRMO was responsible for supervising and directing the disposition of surplus material from the BNC. This responsibility entailed storing, sorting, and arranging the reuse or sale of various materials. Activities at DRMO that led to contamination of soil and groundwater include recovery of scrap metal, recycling of batteries and electrical transformers, and maintenance of vehicles. In 1996 the DRMO scrap-metal operations at OU NSC ceased to exist.

The primary oil pipeline serving BNC runs through the center of OU NSC, with a connection (as of 1998) to the power plant to the west. An additional pipeline, which has been closed in place, was formerly connected to the OU C storage tank. An oil reclaiming facility operated for many years at Building 588, in the southwest portion of the site.

Underground utilities are common throughout most of OU NSC. Sanitary sewers serving BNC were separated from the storm drain system in 1975. There are approximately 15 storm drains within OU NSC, with the outfalls discharging directly to Sinclair Inlet.

3.1.2 Remedial Action Objectives for OU NSC

The primary remedial action objectives (RAOs) established in the ROD for OU NSC include the following:

- RAO for groundwater: Reduce the potential for arsenic, copper, nickel, lead, pesticides, PCBs, and total petroleum hydrocarbons (TPH) to reach the groundwater, to the extent feasible, using technologies that are implementable and effective.
- RAO for soil: Reduce human exposure to the chemicals of concern (COCs) and reduce or control the contamination of groundwater.
- RAO for surface water: Reduce the potential for COCs to be introduced into water flowing through the storm drains and thus discharged to Sinclair Inlet.
- RAO for storm drain sediment: Reduce the potential for COCs in storm drain sediment to be discharged to Sinclair Inlet.

3.1.3 Chronology of Events for OU NSC

Table 3-1 lists important events and dates for OU NSC.

Table 3-1
Chronology of Site Events for OU NSC

Event	Date
Site discovery by EPA*	1979
Initial assessment study by Navy*	1983
Site inspection by Navy*	1990-1991
RCRA Facility Assessment by EPA*	1992
MTCA Enforcement Order 92 TC-006 for OU NSC only, requiring preparation of an RI/FS, cleanup action plan, and interim action alternatives proposal for surface soil	March 1992
Final NPL listing*	May 1994
Interim removal action at DRMO	1994
Remedial investigation/feasibility study	October 1992 - November 1995

Table 3-1 (Continued)
Chronology of Site Events for OU NSC

Event	Date
ROD signatures	December 1996
Remedial design start	April 1997
Remedial design complete	May 1997
Federal Interagency Agreement signature*	August 1998
Actual remedial action start	June 1997
Remedial action complete	March 1999
Construction completion date	March 1999
Final closeout report	April 1999

*For Bremerton Naval Complex as a whole

3.2 OU A

3.2.1 Description of OU A

OU A encompasses approximately 12 acres of filled land that was created over time starting in the 1940s. OU A formerly included 27 acres of intertidal and subtidal areas adjacent to the filled areas. These marine areas were redesignated as part of OU B marine to allow the marine environment at the BNC to be addressed as a whole. The terrestrial portion of OU A is bounded by a steep 10- to 15-foot riprap embankment, with an average top elevation of 10 feet above msl.

During the RI/FS process, OU A was divided into three zones:

- Zone I—the Charleston Beach parking lot
- Zone II—the U.S.S. *Missouri* parking lot (and former helicopter pad)
- Zone III—the upland parking lot between the railroad tracks and State Highway 304

These zones differ on the basis of site history, ownership, and degree and type of site contamination. Zones I and II were created from filling operations between 1946 and the early 1970s. Fill included dredge spoils, spent sandblast grit, construction debris, and industrial wastes. During the RI/FS, most of the contaminated media identified at OU A were within Zone II. Consequently the remedy for OU A, although inclusive of the entire OU, focuses on Zone II.

Zone I

The Charleston Beach parking lot was expanded to its current size between 1946 and 1956. Presumably the fill used for this purpose was the same material as that used for the helicopter pad in Zone II. No hazardous waste disposal activities in Zone I have been identified; however, industrial activities, including a former coal bunker and fuel loading docks, occupied a portion of this zone in the past.

Zone II

Most of the disposal of what is now known as hazardous waste at OU A occurred within Zone II. Fill was placed in Zone II between 1946 and the early 1970s. A helicopter pad was constructed in the center portion of this zone in the early 1960s. The entire U.S.S. *Missouri* parking lot in Zone II was paved in 1995. Prior to 1995, the gravel parking surface was occasionally covered with oil to reduce dust generation. Between 1963 and 1972, approximately 30,000 gallons of liquid wastes were disposed of in unlined pits that drained into Sinclair Inlet. Starting in the mid-1950s, copper slag grit used for sandblasting at BNC and dredge spoils from Drydock 6 construction were evidently used as fill in Zone II. Historical Navy drawings also indicate that burn pits existed in Zone II in the past.

Zone III

Zone III is the upland parking lot between the existing railroad tracks and State Highway 304. This area represents the 1946-era shoreline. Before being converted to a parking lot in the mid-1980s, this area was the location of six railroad tracks (rather than the current three). No record of disposal activities exists for Zone III.

3.2.2 Remedial Action Objectives for OU A

The primary RAOs established in the ROD for OU A include the following:

- Prevent people from coming in contact with soil containing lead, arsenic, PCBs, and polycyclic aromatic hydrocarbons (PAHs) at concentrations greater than acceptable levels.
- Reduce the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials.
- Limit the erosion of heavy metal and organic constituents in fill materials into Sinclair Inlet marine waters through the existing riprap.

- Reduce the transport of chemicals to groundwater or the marine environment.
- Enhance terrestrial and marine habitat.

3.2.3 Chronology of Events for OU A

Table 3-2 lists important events and dates for OU A.

Table 3-2
Chronology of Site Events for OU A

Event	Date
Site discovery by EPA*	1979
Initial assessment study by Navy*	1983
Site inspection by Navy*	1990–1991
RCRA Facility Assessment by EPA*	1992
MTCA Enforcement Order 92 TC-112 for all of the complex, except OU NSC, which required preparation of an RI/FS, cleanup action plan, and interim action alternatives proposal for surface soil	May 1992
Final NPL listing*	May 1994
Removal actions	Installation of storm drains at helicopter pad parking lot (September 1995)
Remedial investigation/feasibility study	April 1993–October 1995
ROD signatures	January 1997
Remedial design start	April 1997
Remedial design complete	December 1997
Federal Interagency Agreement signature*	August 1998
Actual remedial action start	January 1998
Remedial action completion date	November 2000
Construction completion date	November 2000
Final remedial action report	August 1999
Addendum to final remedial action report	December 2000

*For Bremerton Naval Complex as a whole

3.3 OU B MARINE

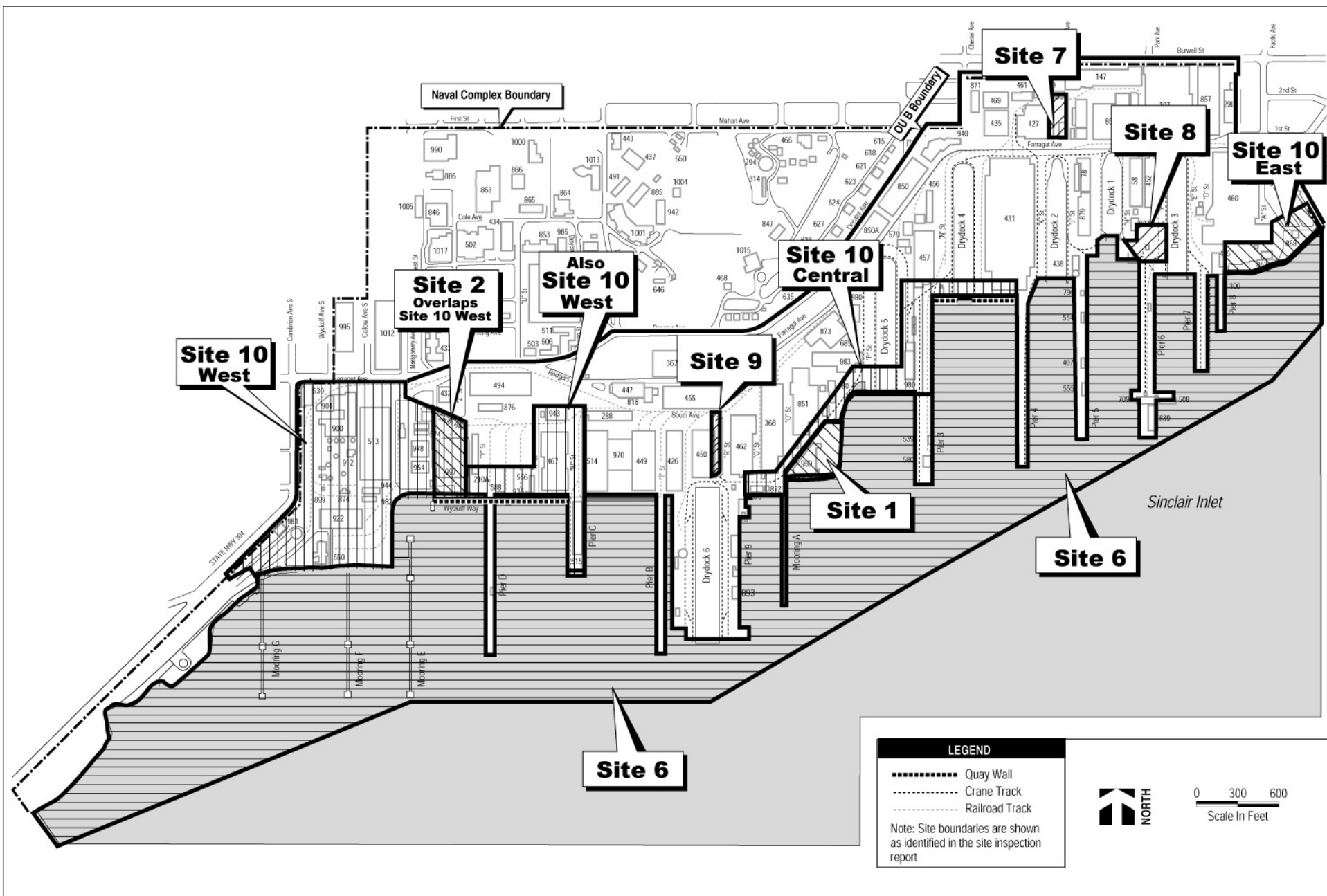
3.3.1 Description of OU B Marine

OU B is composed of both terrestrial and marine areas. OU B was divided into OU B marine and OU B terrestrial in the spring of 2000 to accelerate the cleanup of the marine portions of OU B. A navigational dredging project was scheduled by the Navy for the summer of 2000, and the Navy, Ecology, and EPA agreed that an early Record of Decision would be appropriate to coordinate cleanup dredging with navigational dredging.

OU B marine includes all of the nearshore marine environment associated with BNC extending east and west along the shorelines of OUs A, B, and NSC (approximately 270 acres of subtidal land). OU B marine includes a limited marine area adjacent to OU A that at one time was considered part of OU A. The primary threat posed by conditions within OU B marine is the potential for marine life to accumulate chemicals from marine sediments and thereby pose a risk to subsistence-level consumers of seafood collected from Sinclair Inlet.

3.3.2 Remedial Action Objectives for OU B Marine

- The following RAOs were established in the ROD for OU B marine:
- Reduce the concentration of PCBs in sediments to less than the minimum cleanup level (MCUL) in the biologically active zone (0- to 10-cm depth) within OU B marine, as a measure expected to reduce PCB concentrations in fish tissue.
- Control shoreline erosion of contaminated fill material at Site 1 (Figure 3-1).
- Selectively remove sediment with high concentrations of mercury collocated with PCBs.



U.S.NAVY

Delivery Order 0017
Bremerton Naval Complex
FIVE-YEAR REVIEW

Figure 3-1
Site Locations

3.3.3 Chronology of Events for OU B Marine

Table 3-3 lists important events and dates for OU B marine.

Table 3-3
Chronology of Site Events for OU B Marine

Event	Date
Site discovery by EPA*	1979
Initial assessment study by Navy*	1983
Site inspection by Navy*	1990–1991
Draft RCRA Facility Assessment by EPA*	1992
MTCA Enforcement Order 92 TC-112 for all of Complex, except OU NSC, which required preparation of an RI/FS, cleanup action plan, and interim action alternatives proposal for surface soil	May 1992
Final NPL listing*	May 1994
Removal actions	None
Early action ROD signatures	June 2000
Federal Interagency Agreement signature*	August 1998
Remedial design start	1999
Remedial design complete	May 2000
Actual remedial action start	June 2000
Construction, dredging, and capping completed	October 2001
Remedial investigation for OU B	February 1994–March 2002
Feasibility study for OU B	May 1998–May 2002

*For Bremerton Naval Complex as a whole

3.4 OU B TERRESTRIAL

3.4.1 Description of OU B Terrestrial

The terrestrial portion of OU B includes all of the land area of BNC that is not within the area of OU A and OU NSC, except for the area that lies north of Farragut Avenue in the western portion of BNC and north and northwest of Decatur Avenue farther east (approximately 60 to 65 acres [U.S. Navy 2002b]). The terrestrial portion of OU B is generally flat, completely industrialized, and almost entirely paved. OU B terrestrial encompasses the heart of the industrial activities at BNC, including all six drydocks. The primary threats posed by conditions at OU B terrestrial are

the potential for contaminants to be transported to Sinclair Inlet and the possibility of human contact with contaminated soil.

3.4.2 Preliminary RAO Summary for OU B Terrestrial

The ROD for OU B terrestrial was under discussion during this 5-year review period. Based on the Proposed Plan the RAOs for OU B terrestrial are the following:

- Reduce the potential for chemical transport to the adjacent marine environment from accumulation of sediment or debris in the stormwater system, infiltration of soil and groundwater into the stormwater system, infiltration of surface water into the soil, and erosion of shoreline soil.
- Continue to limit exposure to site soils and groundwater.

3.4.3 Chronology of Events for OU B Terrestrial

Table 3-4 lists important events and dates for OU B terrestrial.

Table 3-4
Chronology of Site Events for OU B Terrestrial

Event	Date
Site discovery by EPA*	1979
Initial assessment study by Navy*	1983
Site inspection by Navy*	1990–1991
RCRA Facility Assessment by EPA*	1992
MTCA Enforcement Order 92 TC-112 for all of Complex, except OU NSC, which required preparation of an RI/FS, cleanup action plan, and interim action alternatives proposal for surface soil	May 1992
Final NPL listing*	May 1994
Removal actions	<ul style="list-style-type: none"> •Time-critical Removal Action at Site 2 (1990) •Rapid Response at Mooring G (February 1994) •Structure 614 closure (September 1994) •Building 106 Tanks closure (February 1995) •Pier C oil line flushing (October 1996) •Miscellaneous site paving (August 1997 to present) •Abandonment of fuel oil facilities at Pier 4, Pier C, and •Tank 817 (February 1998) •Asbestos removal at Building 147 (November 2001)

Table 3-4 (Continued)
Chronology of Site Events for OU B Terrestrial

Event	Date
Federal Interagency Agreement signature*	August 1998
Remedial investigation for OU B	February 1994–March 2002
Feasibility study for OU B	May 1998–May 2002
Proposed Plan complete	August 2002

*For Bremerton Naval Complex as a whole

3.5 OU C

3.5.1 Description of OU C

OU C is a petroleum-contaminated site. CERCLA does not address petroleum as a contaminant. Petroleum releases are addressed, in Washington State, under Subchapter IX of RCRA and the State's MTCA. OU C is included in this CERCLA 5-year review to address the parallel MTCA review requirements.

OU C is located in the north-central upland portion of the BNC. The area is topographically higher than much of the operations area of the BNC, with elevations ranging from approximately 60 to 100 feet above msl. OU C centers on a steep ravine, which was partially filled prior to construction of two underground and one aboveground petroleum storage tanks. Tank 315 was the aboveground storage tank (AST) and was removed in the 1990s. Tank 316 was closed, filled with soil and industrial debris, and paved over in the early 1990s. The area above Tank 316 is currently used for parking. Tank 317 was closed and filled with clean soil. Tank 317 is considered to be the primary source of petroleum contamination that has been found to exist in the subsurface at OU C. Approximately 60,000 gallons of petroleum, primarily bunker C fuel oil, were initially estimated to be present in the subsurface beneath and downgradient of the former underground storage tank (UST) and AST locations. The potential for petroleum to contaminate groundwater and possibly be transported off site in the form of free product are the primary threats posed by OU C.

3.5.2 Chronology of Events for OU C

Table 3-4 lists important events and dates for OU C.

Table 3-5
Chronology of Site Events for OU C

Event	Date
Site discovery by EPA*	1979
Initial assessment study by Navy*	1983
Site inspection by Navy*	1990–1991
RCRA Facility Assessment by EPA*	1992
MTCA Enforcement Order 92 TC-112 for all of Complex except OU NSC, which required preparation of an RI/FS, cleanup action plan, and interim action alternatives proposal for surface soil	May 1992
Final NPL listing*	May 1994
Steam sparging system installed as part of demonstration program under MTCA	July 1996
Steam sparging system expanded under MTCA	August 1997
Federal Interagency Agreement signature*	August 1998
Steam sparging system performance assessed through soil, groundwater, and free-product investigations under MTCA	November 1998–January 1999
Steam sparging system “mothballed” under MTCA	September 1999
Focused remedial investigation and screening-level feasibility study completed under MTCA	April 2002

*For Bremerton Naval Complex as a whole

4.0 REMEDIAL ACTIONS

4.1 OU NSC

4.1.1 Selected Remedy for OU NSC

The components of the selected remedy for OU NSC are the following:

1. Enhancement of existing paving to reduce human contact with soil and reduce leaching of contaminants from soil by precipitation
2. Cleaning of stormwater facilities to remove accumulated soil, fill, and debris
3. Repair of damaged stormwater piping identified during assessment and cleaning operations
4. Implementation of institutional controls to limit access to the area via existing security procedures, to restrict groundwater and land usage, and to ensure that residual contamination is taken into consideration if land use or ownership changes in the future
5. Development of a storm drain maintenance plan
6. Development of an excavation management plan
7. Development and implementation of a long-term monitoring plan
8. Review of the remedial action and monitoring program at least every 5 years

4.1.2 Implementation of OU NSC Remedy

Completion of remedy components 1, 2, and 3 listed in Section 4.1.1 was documented in the remedial action closeout report for OU NSC (U.S. Navy 1999b). Storm drain cleaning and repair and paving enhancement were performed between June 1997 and March 1999.

Development of the storm drain maintenance plan and the excavation management plan (components 5 and 6) was not completed during this 5-year review period. Draft versions of the storm drain maintenance plan and excavation management plan were generated in a draft land use control plan (LUCP) for OU A, OU B, and OU NSC (U.S. Navy 2001c). This plan was not

finalized. In late 2001, the Navy, in conjunction with EPA and Ecology, determined that it would be more appropriate to complete the OU B Terrestrial ROD before proceeding further with the LUCP. This course of action would allow the development of a single BNC-wide LUCP, which would be consistent with national policy.

Existing procedures of the environmental and public works divisions of BNC partially meet the objectives of remedy components 5 and 6 and include the following:

- The existing BNC instruction for water pollution prevention and control includes best management practices (BMPs) for storm drain cleaning and maintenance (U.S. Navy 1997b). Certain catch basins that are known to periodically accumulate sediment are inspected and cleaned under this instruction, and an informal log of cleaning activities is maintained.
- Contractors performing excavation work at BNC are provided the *Contractor's Guide to Environmental Compliance* for BNC (U.S. Navy 1997a), which describes practices for excavation and handling of chemically contaminated soil. Staff of the BNC environmental division monitor contractor compliance with the requirements of this guide.

Storm drain maintenance procedures are being revised and expanded to meet the expected requirements of the pending National Pollutant Discharge Elimination System (NPDES) permit renewal.

Remedy component 4 (institutional controls) will be fully implemented after the BNC-wide LUCP is finalized. Institutional control requirements of remedy component 4 are partially addressed by existing BNC programs, including the following:

- OU NSC is located inside the BNC fence, and site access is restricted by the existing BNC security measures, which allow only properly badged personnel to enter OU NSC through guarded gates.
- No formal restriction on groundwater use at BNC has been promulgated; however, an informal understanding exists among BNC personnel that groundwater use is neither appropriate nor practical. There is no beneficial use for groundwater from beneath BNC that would make its use attractive. Existing wells are for environmental monitoring only and are not readily accessible for other uses.

- Land use restrictions are tracked, and compliance is enforced by the FISC Management Planning Division (Code 41) and EFA NW Facilities Planning Division. One or both are responsible for checking BNC base maps prior to validating BNC projects. Prior to transfer of any portion of the BNC, the Navy will advise the disposal agency of the conditions, terms, and limitations of applicable land use controls (LUCs) required in RODs. In the event that the Navy is the disposal agency, the Navy will ensure that the LUCs are included in the deed and run with the land.

Remedy component 7 was satisfied by the publication of the final monitoring plan for OU NSC in October 2000 (U.S. Navy 2000c) and annual monitoring events that began in 1998. Remedy component 8 is addressed by this 5-year review report.

4.2 OU A

4.2.1 Selected Remedy for OU A

The components of the selected remedy for OU A are the following:

1. Upgrade of the pavement over approximately 3.7 acres
2. Installation of erosion protection (additional riprap or stabilized cobble/gravel layer) along approximately 1,400 lineal feet of the existing shoreline, incorporating the mitigation of fish and shellfish habitat loss
3. Implementation of institutional controls, including fencing, warning signs, prohibitions on fish and shellfish harvesting at Charleston Beach, and land use restrictions on residential use
4. Development of a BNC-wide soil management plan that incorporates the residential land use restrictions and inspection requirements for pavement and erosion protection
5. Implementation of a groundwater monitoring program
6. Review of the monitoring at least every 5 years
7. Implementation of a monitoring program for all remedy components

8. Regular inspections and maintenance of the pavement and erosion protection
9. Implementation of marine and terrestrial habitat enhancements
10. Compliance with the future BNC-wide petroleum cleanup program

4.2.2 Implementation of OU A Remedy

Completion of remedy components 1, 2, and 9 listed in Section 4.2.1 was documented in the final remedial action report for OU A (U.S. Navy 1999a) and the addendum to the final remedial action report for OU A (U.S. Navy 2000a). Shoreline erosion protection and beach habitat were constructed between January 26 and March 4, 1998. Additional shoreline erosion protection was constructed between July 10 and November 28, 2000, and consisted of the replacement of a failing seawall. Terrestrial habitat enhancement included a vegetated soil pocket and bird nest boxes constructed between March 9 and April 28, 1998. Asphalt repair and sealing were performed between July 11 and August 1, 1998.

Remedy component 3 (institutional controls) will be fully implemented after the BNC-wide LUCP is finalized. Institutional control requirements of remedy component 3 are partially addressed by existing BNC programs:

- Limited opportunity for public access exists at OU A; activities within OU A are monitored by roving Navy Region Northwest security patrols. Fish and shellfish harvesting is prohibited, and this prohibition is enforced by the roving security patrols. Access in and out of OU A is limited by existing fencing, and signs on the fencing indicate that OU A is U.S. government property.
- No formal restriction on groundwater use at BNC has been promulgated; however, an informal understanding exists among BNC personnel that groundwater use is neither appropriate nor practical. There is no beneficial use for groundwater from beneath BNC that would make its use attractive.
- Land use restrictions are tracked, and compliance is enforced by the FISC Management Planning Division (Code 41) and EFA NW Facilities Planning Division. One or both are responsible for checking BNC base maps prior to validating BNC projects. Prior to transfer of any portion of the BNC, the Navy will advise the disposal agency of the conditions, terms, and limitations of applicable LUCs required in RODs. In the event that the Navy is the disposal

agency, the Navy will ensure that the LUCs are included in the deed and run with the land.

Component 4 had been partially implemented at the time of this 5-year review. Inspection requirements for pavement and shoreline protection were implemented as part of the long-term monitoring process. The soil management plan requirement is equivalent to the excavation management plan requirement established under the OU NSC ROD. As discussed in Section 4.1.2, the BNC-wide excavation management plan was not completed during this 5-year review period. The content of the plan will be included in a BNC-wide LUCP.

Remedy components 5, 7, and 8 were satisfied by publication of the final monitoring plan for OU A in October 2000 (U.S. Navy 2000b) and annual monitoring events, which began in 1998. Remedy component 6 is addressed by this 5-year review report.

Remedy component 10 was addressed by publication of the BNC-wide petroleum management plan in March 2002 (U.S. Navy 2002b). The Navy will begin implementation of this plan with the monitoring event planned for August 2002. Full implementation will require coordination with the future OU B terrestrial monitoring plan.

4.3 OU B MARINE

4.3.1 Selected Remedy for OU B Marine

The components of the selected remedy for OU B marine are the following:

1. Dredging of selected sediments containing PCBs at concentrations greater than remedial action levels and other sediments with elevated mercury concentrations
2. Confined aquatic disposal (CAD) pit construction for dredged sediment disposal
3. Placement of a thick-layer cap offshore of OU A
4. Placement of a thin-layer clean sediment cap surrounding the thick cap offshore of OU A to reduce the contaminant concentrations to which benthic community organisms are exposed and to enhance natural recovery of surface sediments
5. Habitat restoration in the area offshore of OU A by sediment placement to create a shallower slope

6. Shoreline stabilization at Site 1
7. Monitoring during implementation of the remedial actions to evaluate short-term environmental impacts and verify proper implementation
8. Development and implementation of a long-term monitoring plan for the CAD and shoreline stabilization, sediments, and marine tissue
9. Maintenance of the CAD and shoreline stabilization remedy components
10. Inclusion of institutional controls in the future BNC-wide LUCP, including measures to maintain the integrity of the CAD pit cap and the shoreline protection system at Site 1

4.3.2 Implementation of OU B Marine Remedy

Remedy components 1 through 7 were completed in fall 2001 (U.S. Navy 2002f). The long-term monitoring plan required by component 8 was under development but not completed within this 5-year review period. Maintenance requirements (component 9) had not been formally incorporated into BNC procedures within this 5-year review period. The BNC-wide LUCP (component 10) was on hold, pending completion of the OU B Terrestrial ROD.

4.4 OU B TERRESTRIAL

The Proposed Plan for OU B terrestrial was published on 16 August 2002. Based on the Proposed Plan, the components of the selected remedy for OU B terrestrial to be published in the ROD are likely to include the following:

- Cleaning, inspection, and repair, or replacement, as needed and feasible, of the stormwater facilities with OU B
- Asphalt and concrete paving and vegetated clean soil covers to reduce water infiltration to the subsurface, including paving currently unpaved areas and upgrading pavement within existing paved areas
- Shoreline erosion protection, with investigation of the potential for using soft bank designs

- Institutional controls
- Long-term groundwater monitoring.

4.5 OU C

A steam sparging system was installed at OU C under a demonstration program in July 1996 and expanded in August 1997. The system successfully recovered petroleum from the subsurface during initial operation; however, production during the expansion stage was less than expected. Additional investigation of OU C was conducted in 1998 and 1999. Based on the results of the additional investigation, the Navy and Ecology agreed that the steam sparging system should be shut down to allow evaluation of natural attenuation mechanisms and preparation of the focused RI/FS. The steam sparging system was “mothballed” in September 1999.

Quarterly groundwater sampling has been conducted at OU C since January 2001, and the focused RI/FS recommends continuation of monitoring. The results of the RI/FS indicated that petroleum migration was not occurring and that free product levels were stable. Based on the findings of the focused RI/FS, the Navy with the concurrence of Ecology concluded that no further remedial action was needed but that ongoing monitoring and contingency planning were still necessary. These conclusions will be documented in a corrective action plan (CAP), which is currently under development.

5.0 REVIEW OF FINDINGS

5.1 FIVE-YEAR REVIEW TEAM

The Navy is the lead agency for this 5-year review. Personnel from EFA NW and the Bremerton Naval Complex represented the Navy in this 5-year review. Project managers and other staff from the EPA, Ecology, and the Suquamish Tribe, the other 5-year review team members, have participated in the review process. Both the EPA and Ecology are cosignatories of the RODs for OU NSC, OU A, and OU B marine. All team members had the opportunity to provide input to this report.

5.2 RESULTS OF DOCUMENT REVIEW

Documents reviewed during this 5-year review were those that described the construction and monitoring of the selected remedies, the RODs in which the selected remedies were described, and the available BNC-wide plans called for in the RODs. When a ROD, plan, or other document had not yet been completed, the work-in-progress information was reviewed or, at a minimum, discussed with the responsible individual.

The documents that were reviewed are listed below:

Signed RODs (OU NSC, OU A, and OU B marine) (U.S. Navy, Ecology, USEPA 2000, 1996a, 1996b)

Remedial action closeout reports (OU NSC and OU A) (U.S. Navy 1999a, 1999b)

- Draft OU B marine post-remedial construction report (U.S. Navy 2002f)
- Long-term monitoring plans (OU NSC and OU A) (U.S. Navy 2000b, 2000c)
- Monitoring reports and work-in-progress monitoring data analysis (OU NSC and OU A)
- Petroleum management plan (U.S. Navy 2002b)
- Proposed Plan for OU B terrestrial (U.S. Navy, Ecology, and USEPA 2002)

- Focused RI/FS for OU C (U.S. Navy 2002a)
- BNC police trespass report (see Appendix D)
- Preliminary draft LUCP (U.S. Navy 2001c)
- Draft excavation management plan (U.S. Navy 1999c)
- Existing water pollution prevention and control plan (U.S. Navy 1997b) with proposed revisions
- Catch basin survey report and addendum for OU NSC (U.S. Navy 2000d, 2002c)
- Monitoring well field survey report (U.S. Navy 2001b)

Review of these documents provided much of the information included in Sections 3 and 4 regarding the description of the OUs, the RAOs and selected remedy components for each OU, and the status of remedy implementation and monitoring at each OU.

The results of the document review are discussed in the following subsections, as they relate to components of the remedies for OU NSC, OU A, and OU B marine.

5.2.1 Physical Construction Components of the Remedies

The construction components required in the RODs for OU NSC and OU A have been completed and documented (U.S. Navy 1999a, 1999b, 2000a). Documented construction includes the following:

- Paving enhancements, storm drain cleaning, and storm drain repair at OU NSC
- Paving enhancements, shoreline erosion protection, and habitat enhancements at OU A

The final version of the OU B marine post-remedial construction report is not yet available.

5.2.2 Management Plans and Institutional Controls

The petroleum management plan is complete and includes specific recommendations for modifying monitoring of petroleum hydrocarbon contaminants at BNC (U.S. Navy 2002b). The excavation management plan and OU NSC storm drain maintenance plan are not complete. Several documents were identified during this 5-year review that demonstrate either work in progress toward completing the plans, or existing BNC procedures (developed for reasons other than ROD requirements) that partially meet the intent of the plans. The documentation reviewed included the following:

- Preliminary draft LUCP (U.S. Navy 2001c)
- Draft excavation management plan (U.S. Navy 1999c)
- Existing water pollution prevention and control plan (U.S. Navy 1997b) with proposed revisions
- Catch basin survey report for OU NSC (U.S. Navy 2000d)
- Addendum to the catch basin survey report for OU NSC (U.S. Navy 2002c)

The draft instruction for excavation management was incorporated into the construction specifications for the Pier D construction (which was under way during this review). This inclusion demonstrates that existing base review processes often result in the preparation of project-specific excavation management plans that meet the intent of the remedy components that require a BNC-wide excavation management plan. The catch basin survey report and addendum show that storm drain maps have been prepared for OU NSC. The maps will be incorporated into the storm drain maintenance plan developed for OU NSC.

Implementation of other institutional controls, such as land use and groundwater use restrictions, access restrictions, and land ownership transfer restrictions, are not currently documented in a final written document (such as the LUCP).

Written record of the implementation of access restrictions, in the form of a Navy Region Northwest security trespass report, was reviewed. This report, which contains no records earlier than 1999, shows six or fewer trespass incidents per year between 1999 and 2002. The descriptions of the incidents show that no incidents were likely to have resulted in exposure to contaminants.

5.2.3 Monitoring

Long-term monitoring plans have been published for OU NSC and OU A (U.S. Navy 2000b, 2000c). The long-term monitoring plan for OU B marine is under development. Long-term monitoring at OU C has been conducted for 2 years, although the specific requirements of the OU C long-term monitoring program have not been finalized. A long-term monitoring plan for OU C will be formally adopted during the development of the CAP for OU C. The long-term monitoring plans for OU NSC and OU A include both groundwater monitoring (semiannually) and inspection of remedy components (annually). In support of BNC-wide long-term monitoring efforts, the Navy has conducted an exhaustive field survey of the 181 groundwater monitoring wells at BNC (U.S. Navy 2001b).

Long-term monitoring events at OU NSC and OU A conducted since 1998 have been documented in a series of annual monitoring reports, which are summarized in Table 5-1, along with the monitoring events covered by each report. Reports indicate that, overall, the long-term monitoring plans for OU NSC and OU A have been implemented as planned, with monitoring conducted periodically since June 1998. The stated semiannual schedule for groundwater monitoring has not been rigorously followed, but two sampling events have been conducted for all but 1 year since 1998 (the January 2000 monitoring event appears to have been considered both the last sampling event of 1999 and the first sampling event of 2000). The list of sampling locations and analytes reported in the monitoring reports conforms to the list of COCs in the RODs for OU NSC and OU A and in the long-term monitoring plans. Annual site inspections of the remedy components at OU NSC and OU A have been conducted in the spring of each year since 1999, except for the year 2000.

Table 5-1
Monitoring Reports Summary

Title and Reference	Groundwater Monitoring Events Reported	Annual Inspections Reported
Executive Summary for Annual Monitoring Report, Operable Unit A, 1999 (U.S. Navy 2000g)	NA	1999
Executive Summary for the Groundwater Monitoring Report, Operable Unit A, 1999 (U.S. Navy 2000h)	June and December 1998, July 1999, and January 2000	NA
Executive Summary for Annual Monitoring Report, Operable Unit NSC (FISC), 1999 (U.S. Navy 2000e)	NA	1999
Executive Summary for the Groundwater Monitoring Report, Operable Unit NSC, 1999 (U.S. Navy 2000f)	June and December 1998, July 1999, and January 2000	NA
Executive Summary for the Groundwater Monitoring Report, Operable Unit A, 2000 (U.S. Navy, undated)	August–September 2000	None
Executive Summary for the Groundwater Monitoring Report, Operable Unit NSC, 2000 (U.S. Navy, undated)	August–September 2000	None
Executive Summary for the Groundwater Monitoring Report, Operable Unit NSC, 2001 (U.S. Navy, undated)	February 2001	NA
Executive Summary for Annual Monitoring Report, Operable Unit NSC, 2001 (U.S. Navy, undated)	NA	2001
Annual Monitoring Report Operable Unit A for Year Ending 2001 (U.S. Navy 2001d)	NA	2001
Draft Semi-Annual Groundwater Monitoring Report, September/October 2001, Operable Unit NSC, Bremerton Naval Complex, Washington (U.S. Navy 2002d)	September–October 2001	NA
Draft Semi-Annual Groundwater Monitoring Report, September/October 2001, Operable Unit A, Bremerton Naval Complex, Washington (U.S. Navy 2002e)	September–October 2001	NA

Note:
 NA - not applicable

The trends of COCs in groundwater have been tracked throughout the monitoring program, with trend plots presented in each monitoring report. This 5-year review considered data trends through the April 2002 sampling event, for which trend plots will be presented in a pending monitoring report. The contaminant trends at OU NSC, OU A, and OU C are discussed separately in the following subsections. Trend plots including the most recent data for OU NSC and OU A are included in Appendix B. These figures compare the results of on-site groundwater monitoring to ambient groundwater levels based on the results of sampling of groundwater in upgradient wells and thus representative of groundwater that enters the sites.

Groundwater Contaminant Trends at OU NSC

The trend graphs for COCs in groundwater at OU NSC show concentration spikes of nearly an order of magnitude for arsenic in wells MW310 and MW386 and for TPH in well MW392 for the fall 2001 sampling event. The spring 2002 data showed that the COC concentrations had generally returned to the lower concentration ranges historically observed. These spikes are considered to be outliers and not representative of actual conditions.

Except for the intermittent concentration spikes, the trends of COC concentrations in groundwater, including TPH, show generally declining or steady concentration values.

In accordance with the long-term monitoring plan (U.S. Navy 2000c), the pesticide and PCB COCs were omitted from the year 2000 and 2001 monitoring events. These COCs were included in the analytical suite for the spring 2002 monitoring event to allow their evaluation during this 5-year review. During the spring 2002 sampling event, pesticide and PCB COCs were not detected at concentrations greater than the laboratory reporting limits. This finding is consistent with historical data, which show only a single detection of total PCBs at the laboratory reporting limit of 0.2 µg/L (January 2000 sampling event, well MW 386).

Groundwater Contaminant Trends at OU A

The trend graphs for COCs in groundwater at OU A reveal overall declining or stable concentrations of most COCs. Spikes in concentration are evident from the historical data but do not invalidate the overall trends. TPH is the only COC that exhibits an increasing concentration trend. This trend is observed only in samples from the off-site, upgradient well 208, located near off-site gasoline-station sources unrelated to Navy activities.

No semivolatile organic compounds (SVOCs) have been detected at concentrations exceeding the groundwater cleanup levels for OU A, with the exception of bis(2-ethylhexyl)phthalate (cleanup level of 5 µg/L). Since 1998, this compound has been detected at concentrations up to

24 µg/L in samples from several wells at OU A. Detection of this compound has been intermittent, and no concentration trends have been established for it. Previous monitoring reports have suggested that bis(2-ethylhexyl)phthalate may be an artifact of the sampling and analysis process.

In accordance with the long-term monitoring plan (U.S. Navy 2000b), pesticide and PCB COCs were omitted from the year 2000 and 2001 monitoring events. These COCs were included in the analytical suite for the spring 2002 monitoring event to allow their evaluation during this 5-year review. During the spring 2002 sampling event, pesticide and PCB COCs were not detected at concentrations greater than the laboratory reporting limits. This finding is consistent with historical data, which show that PCBs were not detected during any of the 1998 and 1999 monitoring events. A single historical detection of a pesticide is recorded—dieldrin in well MW 241 at 0.09 µg/L (July 1999). The consistent lack of detectable concentrations of pesticides and PCBs in groundwater at OU A is the basis for recommending a discontinuation of analysis for these compounds (see Section 7).

Groundwater Contaminant Trends at OU C

Measurements of the thickness of free-phase petroleum hydrocarbons (free product) have shown it to be relatively consistent over time. Analysis of groundwater samples for dissolved-phase petroleum hydrocarbons has revealed no evidence of contaminant migration or movement along the primary pathway of groundwater flow through Drydock 6 into Sinclair Inlet.

5.3 RESULTS OF SITE INSPECTION

A physical site inspection of OU A and OU NSC, including site walks to examine individual remedy components, discussions with BNC and EFA NW staff knowledgeable about the sites and remedies, and completion of inspection forms, was conducted on April 30, 2002. Completed site inspection forms are included in Appendix C. The records review portion of the site inspection was begun during the physical site inspection and completed in the weeks following.

The physical site inspection resulted in the following general findings:

Pavement upgrades have been implemented at OU A and OU NSC. The condition of the pavement is regularly inspected, typically on an annual basis. Repairs are made on the basis of the findings of the inspection, although repairs have not always been completed before the next inspection is made.

The riprap and habitat enhancements have been completed at OU A and are inspected and maintained. Only a small pocket-beach habitat enhancement, which is visible along the otherwise riprap shoreline at OU A, has been accomplished during remedy implementation. Other, less obvious, marine habitat enhancement has been accomplished near shore but below the typical waterline. Terrestrial habitat enhancement is apparent along the shoreline, and it appears well maintained.

The stormwater system at OU NSC has been cleaned and repaired, and plans are in place to clean and repair damage from Pier D construction observed during the site inspection. A catch basin survey has been completed and will be used in preparation of an OU NSC storm drain management plan.

Signs and fencing that limit access are in place at OU A and OU NSC and are maintained. The BNC fence line is marked with signs that say "US Government Property, No Trespassing." Navy Region Northwest security controls all access to OU NSC, and when members of the public are present at OU A, security monitors their activities. Security patrols prevent restricted activities such as fishing.

5.4 RESULTS OF INTERVIEWS

Interviews were conducted with persons familiar with the CERCLA actions at BNC. Interviewees were selected from the Navy (including both EFA NW and BNC itself), the EPA, Ecology, the Suquamish Tribe, and the community. Interview instructions and questions were sent to potential interviewees via e-mail; responses to questions were returned either by e-mail or telephone (at the discretion of the interviewee). Not all those invited to comment chose to do so. Interview responses are documented in Appendix D. Highlights of the interview responses are summarized in the following subsections.

5.4.1 Navy Personnel

Two broad categories of Navy personnel were interviewed: BNC personnel and EFA NW personnel.

BNC Personnel

BNC personnel who participated in the interviews included individuals from the public affairs, public works, and security departments. The Installation Restoration (IR) Program manager for PSNS was also interviewed.

The individual from public affairs was not aware of any long-term or ongoing community concerns regarding implementation of the remedies at OU NSC or OU A. She believes that the community involvement process has been open to community members and any interested party, that comments are invited, and that the process has worked well.

Public works personnel reported that active progress is being made toward an excavation management plan and an OU NSC storm drain maintenance plan, although neither of these plans nor the petroleum management plan had reached them for implementation. These individuals also reported that Pier D construction activities had breached the asphalt cap within OU NSC, and that it was unknown to them if plans had been developed to address excavated soil handling and disposal, and health and safety issues. One interviewee was skeptical about the value of the selected remedy, especially the requirement to pave all of OU A and OU NSC. However, this respondent believed that reduction of infiltration and human exposure had been achieved by the paving. The riprap upgrade at OU A was deemed “very effective in cleaning up the shoreline” by one respondent, although he noted that tidal fluctuation would still move water through the riprap, which he believed could mobilize contaminants. He also noted that although no notifications had been given to Navy personnel regarding the restriction on groundwater use, groundwater has never been used. Lastly, one of the public works respondents believed that no one in the community was aware of the remedy implementation.

The IR Program manager expressed a belief that the remedy implementation process and ongoing monitoring had been successful and had met the goals of the RODs. He also reported that the petroleum management plan had been finalized and that the excavation management plan and the storm drain maintenance plan were on hold, with the intent being to incorporate these documents into an LUCP for BNC. He reported an understanding that this plan would also include shoreline maintenance procedures and that the LUCP would be finalized after the completion of the ROD for OU B terrestrial. The IR Program manager reported that, to his knowledge, no groundwater from beneath BNC had been used and that no notifications had been provided to the effect that groundwater use was restricted. He suggested that such a restriction could be institutionalized in the BNC Master Plan during the next update. He was unaware of any community concerns.

Navy Region Northwest security personnel were not familiar with the OU A and OU NSC remedies but reported standard procedures consistent with the requirements of the RODs. Security personnel provided a summary of a “trespass report,” which documented the incidents of unauthorized access to BNC. During an oral interview, BNC security personnel described the security procedures at OU A (where access by the general public is not strictly prohibited).

EFA NW Personnel

EFA NW staff generally believed that the selected remedies were protective and had effectively met the goals of the RODs. The EFA NW respondents noted the concerns of the Suquamish Tribe regarding the limited habitat enhancement accomplished during implementation of the remedies. Implementation of maintenance plans and programs was noted as a deficiency. EFA NW personnel were aware that the Pier D construction had breached the asphalt cap (as had numerous small utility excavations) and were unaware of any plans in place to address contaminated soil in the excavations.

5.4.2 Agency Personnel

The agency personnel who participated in the interviews reported no complaints, violations, or other incidents regarding BNC. The respondents generally reported feeling well informed about remediation activities at BNC. The agency personnel believed that remedy implementation at OU A and OU NSC had generally been conducted in accordance with the RODs and that monitoring was sufficient. One agency respondent noted increasing concentrations of some contaminants apparent in the monitoring data and stated that the Navy may need to consider alternative remedies if concentrations do not level off or decline. One agency respondent expressed dissatisfaction with the lack of implementation of an excavation management plan and a storm drain maintenance plan but was satisfied with the recently completed petroleum management plan.

Several agency respondents discussed the recent implementation of the remedy for OU B marine. The need for additional investigation and remediation of marine sediment near the CAD pit was noted. One agency respondent also noted that fish mix placed at Site 1 appears to have washed away and requested an evaluation.

One Ecology respondent suggested interviewing Marian Abbett, Ecology's former sediment site manager. However, Ecology personnel attending an April 16, 2002, meeting with the Navy decided adding Ms. Abbett to the interviewee list was not necessary.

5.4.3 Suquamish Tribe

The tribal representative expressed disappointment in the habitat enhancements incorporated into the OU A remedy, but satisfaction with the effectiveness of remedy implementation with regard to chemical contamination. The tribe believes that additional mitigation for loss of marine habitat is required and that chemical concentrations in clam tissue still need to be investigated. The tribal representative also noted the presence of chemical contamination in marine sediment

adjacent to the CAD pit constructed for the OU B marine remedy and stated that this contamination should be investigated.

5.4.4 Community

Interview opportunities were offered to the RAB Community Co-chairs. The community member who responded to the interview request expressed a desire for more direct access to project documents, especially those that are works-in-progress. The community member opined that most community members are unaware of post-ROD implementation activities and knew of no community concerns. The respondent noted the findings of elevated contaminant concentrations adjacent to the CAD pit and expressed a desire for more information about this finding.

5.5 COMMUNITY INVOLVEMENT

5.5.1 History of Community Involvement

The Navy published a community involvement plan (CIP) for BNC in April 1996 (U.S. Navy 1996), replacing the community relations/public participation plan published in October 1992. The new plan's goals are as follows:

- To encourage communication between the Navy and local community
- To encourage public participation in decisionmaking
- To focus on issues of interest to the community during the study and cleanup process
- To be open to change based on community involvement needs

In 1994, BNC began a transition from the regulatory agency-based Technical Review Committee (TRC) to a community-based Restoration Advisory Board (RAB). To ensure that the community had sufficient opportunity to participate in the process, 26,000 brochures were mailed to the surrounding community. The address list included all residences and businesses within 1 mile of the complex, as well as elected officials, religious groups, environmental activists, medical professionals, news media, and ethnic groups. In addition, a series of open houses was held to provide information on cleanup and allow the community to ask questions about the RAB. About 20 individuals expressed interest in being on the RAB. By spring 1995, a community

co-chair had been selected by the community members of the RAB, bylaws had been written, and the RAB was meeting on a regular basis.

Since the inception of the RAB, general attendance at the meetings has declined. Only one of the original RAB members continues to attend the meetings. Attendance is usually about 15 people with about 10 of the people representing the Navy or regulatory community. Meetings are held on an as-needed basis.

Information on the Technical Assistance for Public Participation (TAPP) grants program was provided to community members at the April 1998 RAB meeting. There has been no interest expressed in obtaining a TAPP grant.

Significant documents (e.g., RI/FS reports, Proposed Plans, and RODs) have been made available for public review at three branches of the Kitsap County Regional Library.

5.5.2 Community Involvement During 5-Year Review

The Navy, in conjunction with EPA and Ecology, determined that an open house and public meeting on the 5-year review were not warranted. The Navy published a public notice in the September 20, 2002, *Bremerton Sun* and *Northwest Navigator* that the 5-year review was under way. The public notice outlined the 5-year review process and provided an opportunity for the public to submit comments or concerns. No comments were received. The RAB Community Co-chairs were individually contacted via the interview process. Copies of the final 5-year review report will be placed in the local site repositories at the Kitsap County Regional Libraries. It is also planned that the results of this 5-year review will be discussed in an upcoming RAB meeting.

6.0 TECHNICAL ASSESSMENT

6.1 FUNCTIONALITY OF REMEDY

Is the remedy functioning as intended by the decision documents?

Three remedial actions meet the criteria in the EPA guidance (USEPA 2001) for “operating remedial actions”: the actions for OU NSC, OU A, and OU B marine. The remedy for OU B marine was only recently constructed and, therefore, has only recently transitioned from a remedial action “under construction” to an “operating remedial action.” The functionality of the remedies at OU NSC, OU A, and OU B marine are assessed separately in Sections 6.1.1 through 6.1.3. Specific deficiencies are listed in Section 6.4. Recommended followup actions are discussed in Section 7. The protectiveness statements for each remedy are presented in Section 8.

6.1.1 Functionality of Remedy for OU NSC

The selected remedy for OU NSC is summarized in Section 4.1.1. The physical construction components of the remedy (numbered 1 through 3 in Section 4.1.1) have been implemented in accordance with the ROD. These components are functioning as intended by the ROD. The ubiquitous paving at OU NSC minimizes human exposure to contaminated soil and potential leaching by the passage of precipitation through soil. The contaminant trends in groundwater imply that leaching of contaminants from soil has been minimized. Storm drain cleaning was performed as a one-time source removal in accordance with the ROD, and concurrent repairs were made to the storm drain system to reduce the introduction of contaminated soil through system breaches. The cleaning and repair of the storm drain system is functional, as evidenced by inspections conducted in 1999, 2001, and 2002 that found no significant accumulations of sediment in the system.

Components 5 and 6 of the remedy (the storm drain maintenance and excavation management plans) have not been formally implemented and are not fully functioning as intended by the remedy. As evidenced by the excavation performed for the Pier D construction, excavation management is often fully addressed for large construction projects. The existing processes in place through the BNC environmental and public works divisions result in the review of most, although not all, excavation projects, and the preparation of plans for handling contaminated soil. However, apparently not all public works staff at BNC are aware of the requirements regarding excavation into potentially contaminated soil. EFA NW staff are also apparently unaware of the preparation of excavation management plans before commencing work on specific projects.

Although some stormwater facility assessment, maintenance, and record keeping is conducted as a part of regular public works operations, the rigorous, comprehensive, and ongoing effort implied by the remedy has not been institutionalized.

Component 4 of the remedy (institutional controls) has been partly addressed by existing Navy and BNC-specific procedures already in place. Although the relevant procedures are not formally documented as institutional controls, the procedures are functioning elements of the remedial action.

Component 7 (development and implementation of a long-term monitoring plan) is functioning as intended by the ROD. Although one annual inspection and one semiannual groundwater monitoring event were skipped during the 5-year period under review, the intent of the ROD for periodic monitoring sufficient to document trends and implement corrective action is being met. A rigorous procedure for performing remedy maintenance and repairs based on remedy monitoring has not yet been institutionalized.

The 5-year review requirement of component 8 is functional, as evidenced by the completion of this first 5-year review.

6.1.2 Functionality of Remedy for OU A

The selected remedy for OU A is summarized in Section 4.2.1. The pavement and erosion protection components of the remedy (numbered 1 and 2 in Section 4.2.1) have been implemented in accordance with the ROD. These components are functioning as intended by the ROD. Erosion of the shoreline is negligible, and there is no indication that the protective measures have been compromised. The contaminant trends in groundwater imply that leaching of contaminants from soil has been reduced. The trend of increasing TPH concentrations is not relevant to evaluating the functionality of the OU A remedy. This trend is observed in samples from well 208, located off site and upgradient of OU A, near off-site sources of petroleum. Petroleum hydrocarbons were not among the COCs identified in the OU A ROD. Instead, petroleum issues were deferred to the petroleum management plan (U.S. Navy 2002b), which lists specific recommendations for monitoring petroleum compounds at OU A but does not recommend any alteration of the OU A remedy.

The mitigation of habitat loss mentioned in component 2 and the habitat enhancements of component 9 have been implemented in accordance with the ROD. As summarized in Section 5.4.3, some stakeholders have expressed dissatisfaction with the magnitude of the habitat enhancements. No additional enhancements were required.

Component 3 of the remedy (institutional controls) has been partly addressed by existing Navy and BNC-specific procedures already in place. Although the relevant procedures are not formally documented as institutional controls, the procedures are functioning elements of the remedial action.

Component 4 of the remedy (the BNC-wide excavation management plan) has not been formally implemented and is not fully functioning as intended by the remedy. As evidenced by the excavation performed for the Pier D construction, excavation management is often fully addressed for large construction projects. The existing processes in place through the BNC environmental and public works divisions result in the review of most, although not all, excavation projects and the preparation of plans for handling contaminated soil. However, apparently not all public works staff at BNC are aware of the requirements regarding excavation into potentially contaminated soil. EFA NW staff are also apparently unaware of the preparation of excavation management plans before commencing work on specific projects.

Components 5 through 8 (development and implementation of long-term monitoring programs) are functioning as intended by the ROD. Although one annual inspection and one semiannual groundwater monitoring event were skipped during the 5-year period under review, the intent of the ROD for periodic monitoring sufficient to document trends and implement corrective action is being met. A rigorous procedure for performing remedy maintenance and repairs based on remedy monitoring has not yet been institutionalized.

Component 10 was satisfied by the publication in March 2002 of the BNC-wide petroleum management plan. The Navy will begin implementation of this plan with the monitoring event planned for August 2002. This component of the remedy will be fully functional when the plan is fully implemented, following coordination with the OU B terrestrial monitoring plan.

The 5-year review requirement of component 6 is functional, as evidenced by the completion of this first 5-year review.

6.1.3 Functionality of Remedy for OU B Marine

Remedy components 1 through 7 (listed in Section 4.3.1) have been implemented. Most of these components are functioning as intended by the design. Regulatory agency reviewers have expressed concern regarding the movement of the fish mix placed at this site. A shoreline design engineer has completed an inspection of Site 1 to evaluate the implemented shoreline stabilization measures. He found no indication of failure at Site 1 and concluded that the fish mix has been moving due to tidal action. Monitoring and maintenance of the implemented

habitat enhancements (such as fish mix placement) were specifically excluded from the ROD requirements (U.S. Navy, Ecology, USEPA 2000, Section 12.2.8).

The discovery of contaminated sediment adjacent to the CAD pit has caused regulatory agency reviewers to suggest that additional investigation and remediation may be required. The CAD pit itself, however, was implemented in accordance with the ROD and appears to be functioning as intended. CAD pit construction included rigorous water-quality monitoring that was validated by postconstruction calculations. Limited deposition of contaminated fine sediment around the CAD pit was expected as a result of construction, but this is insufficient to explain the measured contaminant levels. This deposition remains to be evaluated, but does not call into question the functionality of this component of the remedy.

Development of the plans and procedures called for in components 8 through 10 has not been completed.

6.2 CONTINUED VALIDITY OF ROD ASSUMPTIONS

Are the assumptions used at the time of remedy selection still valid?

The assumptions used during remedy selection remain valid for current site conditions, after the implementation of the remedial actions. A review of applicable or relevant and appropriate requirements (ARARs), “to be considered” (TBC) policies and guidance, and basic assumptions used in the risk assessment is provided in the following subsections.

6.2.1 Review of ARARs

Since the signing of the RODs for OU NSC and OU A in 1996 and the early action ROD for OU B marine in 2000, there have been no substantive changes to the ARARs that would call into question the protectiveness of the remedies. State and federal ARARs have been used for various media as part of the implementation of monitoring programs.

State (WAC 173-201A) and federal marine ambient water quality criteria (40 CFR Part 131) were used for several inorganics in developing groundwater cleanup levels for both OU A and OU NSC. These marine ambient water quality criteria have been revised slightly upward for copper (2.5 to 3.1 µg/L), lead (5.8 to 8.1 µg/L), nickel (7.9 to 8.2 µg/L), and zinc (76 to 82 µg/L). These revised criteria would lead to slightly higher groundwater cleanup levels for copper, lead, nickel (Table 8-1 in the OU A and OU NSC RODs), and zinc (Table 8-1 in the OU A ROD) if a ROD were being signed today. However, cleanup levels are not being changed at these sites.

In August 2001, revisions to MTCA (WAC 173-340) adopted in February 2001 took effect. These revisions do not apply to OUs A and NSC since the RODs for these sites were signed prior to the changes. Highlights of the revised MTCA regulation that may apply to RODs prepared in the future include the following:

- Requirement for terrestrial ecological evaluations (discussed in the next subsection)
- Procedures added for establishing site-specific TPH cleanup levels (addressed within the BNC petroleum management plan)
- Replacement of the “100-times” groundwater method with new procedures for assessing the impact of contaminated soils on groundwater (addressed within the framework of the sitewide groundwater modeling performed for the OU B RI/FS)
- Use of toxicity equivalency factors (TEFs) to evaluate dioxins, furans, and PAHs (discussed in the following text)
- Revisions to cleanup standards included in the Cleanup Levels and Risk Calculations (CLARC) database (discussed in the following text)

For individual carcinogenic PAHs (cPAHs) and total cPAHs, the version of MTCA in effect during the signing of the RODs for OU A and OU NSC assumed that all cPAHs were as toxic as benzo(a)pyrene. The August 2001 revision to MTCA under WAC 173-340-708 (8)(e) also permits the use of TEFs for comparison to the reference chemical benzo(a)pyrene when assessing the potential cancer risk of mixtures of cPAHs. The TEF for an individual cPAH can be multiplied by its soil concentration to obtain its total toxicity equivalent concentration (TTEC) in soil. At OU A, the TTECs for all soil locations with measured cPAH concentrations are below the MTCA Method C industrial soil criterion for benzo(a)pyrene (18 mg/kg). In other words, OU A soil would be considered protective for cPAHs under the August 2001 version of MTCA if a ROD were being prepared now. The cPAH concentrations remaining at OU NSC were greater than the cleanup level under the previous version of MTCA, and would also exceed the cleanup level under the revised version of MTCA.

The August 2001 revision to MTCA led to an update of the CLARC database of MTCA Method B and C regulatory values for soil, groundwater, and surface water. The most recent revision to CLARC (CLARC 3.1) was issued in November 2001. CLARC 3.1 provides new regulatory values for many chemicals based on the revised MTCA requirements and revisions to toxicological input parameters (i.e., cancer potency factor and bioconcentration factor). One

change in CLARC 3.1 would result in a lower soil cleanup level for arsenic (219 mg/kg downward to 88.5 mg/kg) if a ROD were being signed now. However, cleanup levels are not being changed at this site. At OU A, where arsenic is present in soil, if the cleanup level were changed, the effect would be minimal with no increase in the areal extent of soil contamination. This is because the arsenic concentration had previously exceeded the MTCA Method C value for industrial soil throughout the helicopter pad parking lot (Zone II) and in the Charleston Beach parking lot (Zone I) (U.S. Navy, Ecology, and USEPA 1996a, Figure 6-5) and thus these areas were paved. Arsenic was not a COC at OU NSC.

The other change involves total PCBs in soil, the cleanup levels for which increased to 65 mg/kg for “high risk and persistent PCBs” (as defined by EPA guidance) for MTCA Method C industrial soil. However, the cleanup level in the RODs is 17 mg/kg, and this value remains protective despite the regulatory changes.

The OU B Terrestrial ROD is expected to include a requirement for a BNC-wide LUCP covering the land use controls and engineering controls required by the OU A and OU NSC RODs. A revised TBC relevant to the LUCP is EPA’s most recent policy regarding institutional controls at federal facilities, issued in 2000 (USEPA 2000).

6.2.2 Review of Risk Assessment Assumptions

None of the assumptions used in the risk assessment relied upon for remedy selection has changed such that protectiveness of the remedy would be called into question. The baseline human health and ecological risk assessments for OU A and OU NSC were completed in accordance with EPA’s risk assessment guidance, which has not changed substantively.

Land use and facility access have remained consistent for OU A and OU NSC, as considered under this 5-year review, and no additional exposure pathways have been identified since the risk assessment was completed. At OU NSC, risks were estimated for the current and future industrial worker, the future construction worker, and the future resident exposure scenarios. At OU A, risks were estimated for the current utility worker, future industrial worker, transit walker, and future resident terrestrial exposure scenarios.

The marine exposure scenarios initially evaluated in terms of human health and ecological risks at OU A were later combined with the evaluation performed for OU B and addressed through the OU B marine remedy. The OU B marine remedy also assessed the risks associated with subsistence use of marine resources. The on-site worker scenarios for both OUs remain viable under the current site uses. The DRMO recycling activities formerly located at OU NSC have been eliminated and that area is currently being used for vehicle parking, which reduces

exposure of industrial workers. Residential use at BNC occurs only within the designated military housing area, which is located upgradient of the industrial area in which OUs A, NSC, and B are located. No unacceptable human health risks were identified for OU A and OU NSC that have not been addressed through remedial actions.

Terrestrial ecological risk assessments were not performed for either OU NSC or OU A because of a perceived lack of appropriate habitat. However, the August 2001 revisions to MTCA under WAC 173-340-7490 include procedures for terrestrial ecological evaluations. These procedures determine whether a release of hazardous substances to soil may pose a threat to the terrestrial environment, characterize existing or potential threats to terrestrial plants or animals exposed to hazardous substances in soil, and establish site-specific cleanup standards for the protection of terrestrial plants and animals. A terrestrial ecological evaluation would not be required for BNC even if the ROD had not yet been signed, under WAC 173-340-7491 (1)(b), because all soil contaminated with hazardous substances is covered by buildings, paved roads, pavement, or other physical barriers that will prevent plants or wildlife from being exposed. Institutional controls will be required for the long-term maintenance of the physical barriers that prevent exposure to soil contamination.

6.3 PROGRESS TOWARDS MEETING REMEDIAL ACTION OBJECTIVES

The actions included in the remedy for OU NSC in effect have met the RAOs for that site. For example, upgrades to pavement and regular inspections and maintenance of pavement have reduced the potential for chemicals to reach the groundwater by reducing infiltration. These measures have reduced the potential for human contact with chemicals of concern. Stormwater facility cleaning and repairs and subsequent catch basin inspections have reduced the potential for chemicals to be introduced into water flowing through the storm drain lines and for chemicals in storm drain sediments to be carried to Sinclair Inlet.

Remedial actions taken for OU A have also met the RAOs for that site. Upgrades to site paving have reduced the potential for contact with chemicals and transport of chemicals to groundwater and the marine environment. Shoreline enhancement including upgrading of riprap has reduced the physical hazards associated with the prior shoreline treatment as well as the potential for erosion of fill material into the Inlet. Enhancements in the quality of both the terrestrial and marine habitat are apparent at the site.

Considerable progress has been made towards the RAOs for OU B marine. Marine sediment dredging, while unlikely to have achieved the RAO of meeting the minimum cleanup level in shallow sediments, have significantly reduced the area-weighted average concentrations of

PCBs. The remedy was also successful at controlling erosion at Site 1 and removing sediments with high mercury concentrations.

6.4 NEW INFORMATION

Has any other information come to light that could call into question the protectiveness of the remedy?

New “area” background values were reported in the final OU B RI report. The reported area background values for arsenic are higher than the “ambient” values previously used in connection with long-term monitoring for OUs A and NSC and are consistent with the “natural” background value of 5 µg/L published by Ecology. Based on Navy/agency discussions regarding updating of groundwater background calculations, the natural background value for arsenic of 5 µg/L published by Ecology was used for data screening in the final OU B RI report. This value should be adopted for use as the groundwater background value for arsenic throughout the naval complex.

For this first 5-year review at BNC, no other new information related to the protectiveness of the remedy other than that already discussed in Sections 6.1 and 6.2 was found.

6.5 TECHNICAL ASSESSMENT SUMMARY

Limitations in the functionality of the remedies for OUs NSC and A identified during this 5-year review are lack of a final sitewide excavation management plan, lack of formalized institutional controls, and failure to implement an OU NSC storm drain maintenance plan. The remedy for OU B marine is not yet complete. The initial disposal operation deposited contaminants in surface sediments outside of the CAD pit perimeter. The remedy will be complete once this contamination is addressed. With the exception of these specific items these remedies are considered functional.

The assumptions on which the remedies for OU NSC, OU A, and OU B marine were based remain valid. No new information has been identified which would call into question the protectiveness of these remedies.

6.6 ISSUES

Table 6-1 lists the issues identified as a result of the 5-year review that appear to have the potential to affect the protectiveness of the remedies at the BNC.

Table 6-1
Issues

Issue	Affects Protectiveness	
	Current	Future
1. BNC-wide excavation management plan not developed	No	Yes
2. OU NSC storm drain maintenance plan not developed	No	Yes
3. Institutional controls at OU NSC and OU A not formally implemented	No	Yes
4. Contamination found in vicinity of marine sediment disposal pit	No	Yes

7.0 RECOMMENDATIONS AND FOLLOWUP ACTIONS

Table 7-1 summarizes the recommendations and follow-up actions identified as a result of the 5-year review process.

Table 7-1
Recommendations and Follow-up Actions

Recommendation/ Follow-up Action	Party Responsible	Oversight Agency	Milestone Date	Follow-up Action: Affects Protectiveness	
				Current	Future
1. Implement Petroleum Management Plan	Navy	EPA Ecology	August 2002	No	Yes
2. Revise area background concentration of arsenic in groundwater to 5 µg/L	Navy	EPA Ecology	March 2003	No	Yes
3. Eliminate analysis of pesticides and PCBs in groundwater samples for OU NSC and OU A	Navy	EPA Ecology	March 2003	No	Yes
4. Eliminate analysis of SVOCs in groundwater samples for OU A	Navy	EPA Ecology	March 2003	No	Yes
5. Develop and implement a BNC-wide excavation management plan which describes what to do with soils prior to, during, and after excavation	Navy	EPA Ecology	October 2003	No	Yes
6. Revise and implement the inspection and maintenance plan for OUs A and NSC to include repair standards and timetables for cap (pavement), signage, fencing, and shoreline erosion control problems	Navy	EPA Ecology	August 2003	No	Yes
7. Complete and implement an OU NSC storm drain maintenance plan	Navy	EPA Ecology	August 2003	No	Yes
8. Complete and implement a BNC-wide land use controls plan that institutionalizes control issues such as drinking water restrictions and transfer of the property	Navy	EPA Ecology	October 2003	No	Yes
9. Consider alternative methods to provide further opportunities for public participation	Navy	EPA Ecology	March 2003	No	Yes

Table 7-1 (Continued)
Recommendations and Follow-up Actions

Recommendation/ Follow-up Action	Party Responsible	Oversight Agency	Milestone Date	Follow-up Action: Affects Protectiveness	
				Current	Future
10. Address sediment contamination discovered near the OU B marine CAD pit.	Navy	EPA Ecology	October 2003	No	Yes
11. Complete and implement the long-term monitoring plan for OU B marine	Navy	EPA Ecology	August 2003	No	Yes

Notes:

CAD - confined aquatic disposal

PCB - polychlorinated biphenyl

SVOC - semivolatile organic compound

8.0 CERTIFICATION OF PROTECTIVENESS

The remedies implemented for OU NSC and OU A are protective in the short term. In order for the remedies to be protective in the long term, comprehensive plans need to be developed and implemented to ensure consistent application.

The remedy for OU B marine is expected to be protective of human health and the environment once the remedy is complete.

FINAL FIVE-YEAR REVIEW OF RECORD OF DECISION
BREMERTON NAVAL COMPLEX
U.S. Navy, Engineering Field Activity, Northwest
Contract No. N44255-00-D-2476
Delivery Order 0017

Section 9.0
Revision No.: 0
Date: 10/17/02
Page 9-1

9.0 NEXT REVIEW

The next 5-year review is tentatively scheduled for 2007.

10.0 REFERENCES

- Kitsap County Ground Water Advisory Committee (KCGWAC). 1991. *Kitsap County Ground Water Management Plan, Grant No. 1, Background Data Collection and Management Issues*. Vol. I. Funded in part through the Centennial Clean Water Fund from the Washington State Department of Ecology. April 1991.
- Naval Energy and Environmental Support Activity (NEESA). 1983. *Initial Assessment Study of Naval Shipyard Puget Sound, Bremerton, Washington*. NEESA 13-022. Port Hueneme, California. March 1983.
- U.S. Environmental Protection Agency (USEPA). 2001. *Comprehensive Five-Year Review Guidance*. Office of Emergency and Remedial Response. EPA 540-R-01-007. OSWER No. 9355.7-03B-P. June 2001.
- . 2000. *Institutional Controls and Transfer of Real Property Under CERCLA Section 120(h)(3)(A), (B), or (C)*. February 2000.
- U.S. Navy. 2002a. *Focused Remedial Investigation and Screening-Level Feasibility Study, Steam Sparging Area – Operating Unit C, Puget Sound Naval Shipyard, Bremerton, Washington*. Prepared by Hart Crowser under Contract N44255-98-D-4408, Delivery Order 004. April 5, 2002.
- . 2002b. *Final Petroleum Management Plan, Bremerton Naval Complex, Bremerton, Washington*. Prepared by The Environmental Company under Contract N44255-98-D-4416. March 2002.
- . 2002c. *Addendum to Catch Basin Survey Report, Operable Unit Naval Supply Center, Bremerton Naval Complex, Bremerton, Washington*. Prepared by The Environmental Company under Contract N44255-98-D-4416. January 2002.
- . 2002d. *Draft Semi-Annual Groundwater Monitoring Report, September/October 2001, Operable Unit NSC, Bremerton Naval Complex, Washington*. Prepared by The Environmental Company, Inc., under Contract N44255-D-98-4416. January 2002.
- . 2002e. *Draft Semi-Annual Groundwater Monitoring Report, September/October 2001, Operable Unit A, Bremerton Naval Complex, Washington*. Prepared by The Environmental Company, Inc., under Contract N44255-D-98-4416. January 2002.

- . 2002f. *Draft OU B Marine Post-Remedial Construction Report and FY00 MCON Project P-338 Closure Report, Bremerton Naval Complex, Bremerton, Washington.* Prepared by Foster Wheeler Environmental Corporation, under Contract N44255-95-D-6030. April 1, 2002.
- . 2002g. *Final Remedial Investigation Report, Operable Unit B, Bremerton Naval Complex, Bremerton, Washington.* 5 vols. Prepared by URS Greiner, Inc., for Engineering Field Activity, Northwest, under CLEAN Contract N62474-89-D-9295. Poulsbo, Washington. March 2002.
- . 2001a. *Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Statutory Five-Year Reviews.* November 2001.
- . 2001b. *Internal Draft Monitoring Well Field Inspection Report, Bremerton Naval Complex, Bremerton, Washington.* Prepared by The Environmental Company, Inc., under Contract N44255-D-98-4416. October 2001.
- . 2001c. *Land Use Control Inspection and Maintenance Plan, Operable Units A, B, and NSC, Bremerton Naval Complex, Bremerton, Washington.* BNC Instruction. Draft final. August 2001.
- . 2001d. *Annual Monitoring Report Operable Unit A for Year Ending 2001.* Site inspection form dated April 2, 2001.
- . 2000a. *Addendum to Final Remedial Action Report, Repairs at Operable Unit A, Naval Station Bremerton, Bremerton, Washington.* Prepared by Foster Wheeler Environmental Corporation, under RAC II Delivery Order 0075. December 8, 2000.
- . 2000b. *Final Monitoring Plan for Operable Unit A, Revision 1, Operable Unit A, Bremerton Naval Complex, Bremerton, Washington.* Prepared by URS Greiner, Inc., for Engineering Field Activity, Northwest, under CLEAN Contract N62474-89-D-9295. Poulsbo, Washington. October 29, 2000.
- . 2000c. *Final Monitoring Plan for Operable Unit NSC, Revision 1, Operable Unit NSC, Bremerton Naval Complex, Bremerton, Washington.* Prepared by URS Greiner, Inc., for Engineering Field Activity, Northwest, under CLEAN Contract. Poulsbo, Washington. October 29, 2000.

- . 2000d. *Catch Basin Survey Report, Operable Unit Naval Supply Center, Naval Station Bremerton, Bremerton, Washington*. Prepared by The Environmental Company under Contract N44255-98-D-4416. October 2000.
- . 2000e. *Executive Summary for Annual Monitoring Report, Operable Unit NSC (FISC), 1999*. September 29, 2000.
- . 2000f. *Executive Summary for the Groundwater Monitoring Report, Operable Unit NSC, 1999*. September 29, 2000.
- . 2000g. *Executive Summary for Annual Monitoring Report, Operable Unit A, 1999*. September 29, 2000.
- . 2000h. *Executive Summary for the Groundwater Monitoring Report, Operable Unit A, 1999*. September 29, 2000.
- . 1999a. *Final Remedial Action Report, Remedial Design/Remedial Action, Operable Unit A, Puget Sound Naval Shipyard, Bremerton, Washington*. Prepared by Foster Wheeler Environmental Corporation under RAC II Delivery Order 0006. August 3, 1999.
- . 1999b. *Remedial Action Closeout Report, Remedial Actions at Operable Unit Naval Supply Center, Fleet and Industrial Supply Center, Bremerton, Washington*. Prepared by Foster Wheeler Environmental Corporation under RAC II Delivery Order 0027. April 16, 1999.
- . 1999c. *Excavation Management Plan for Bremerton Naval Complex*. NAVYDHIPYDPUGETINST 12345.IX. Draft in progress. October 26, 1999.
- . 1997a. *Contractor's Guide to Environmental Compliance*. Puget Sound Naval Shipyard Contract Specification. NAVSHIPYDPUGET P5090(4). May 1997.
- . 1997b. *Water Pollution Prevention and Control Plan*. NAVSHIPYDPUGETINST P5090.30A. September 22, 1997.
- . 1996. *Final Community Involvement Plan/Community Relations Plan*. April 1996.
- . Undated. *Executive Summary for Annual Monitoring Report, Operable Unit NSC, 2001*.

- . Undated. *Executive Summary for the Groundwater Monitoring Report, Operable Unit NSC, 2001.*
- . Undated. *Executive Summary for the Groundwater Monitoring Report, Operable Unit NSC, 2000.*
- . Undated. *Executive Summary for the Groundwater Monitoring Report, Operable Unit A, 2000.*
- . 1989. *Master Plan, Bremerton Naval Complex.* Naval Facilities Engineering Command, Western Division. San Bruno, California.
- U.S. Navy, Washington State Department of Ecology, and U.S. Environmental Protection Agency (U.S. Navy, Ecology, and USEPA). 2002. *Proposed Plan for Cleanup Action at Operable Unit B Terrestrial, Bremerton, Washington.* August 16, 2002.
- . 2000. *Final Record of Decision, BNC OU B Marine.* June 6, 2000.
- . 1996a. *Final Record of Decision, Operable Unit A, Missouri Beach Parking Lot and Charleston Beach, Bremerton Naval Complex, Bremerton, Washington.* November 22, 1996.
- . 1996b. *Final Record of Decision, Operable Unit NSC, Fleet and Industrial Supply Center, Bremerton Naval Complex, Bremerton, Washington.* November 14, 1996.

APPENDIX A

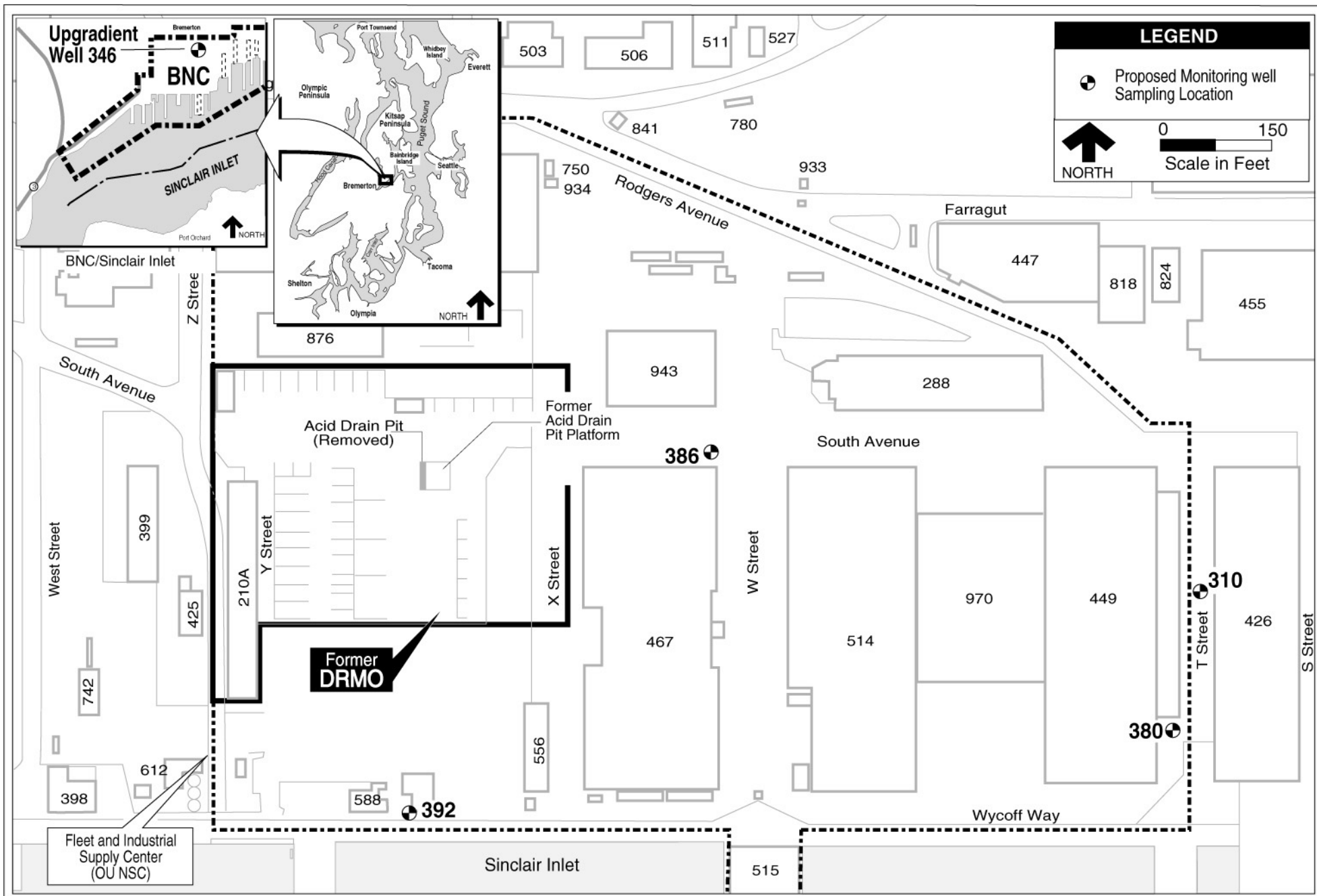
Responses to Comments on the Five-Year Review Report

No comments were received as a result of public notice that this Five Year Review was being prepared.

APPENDIX B

Contaminant Trend Graphs

OUNSC

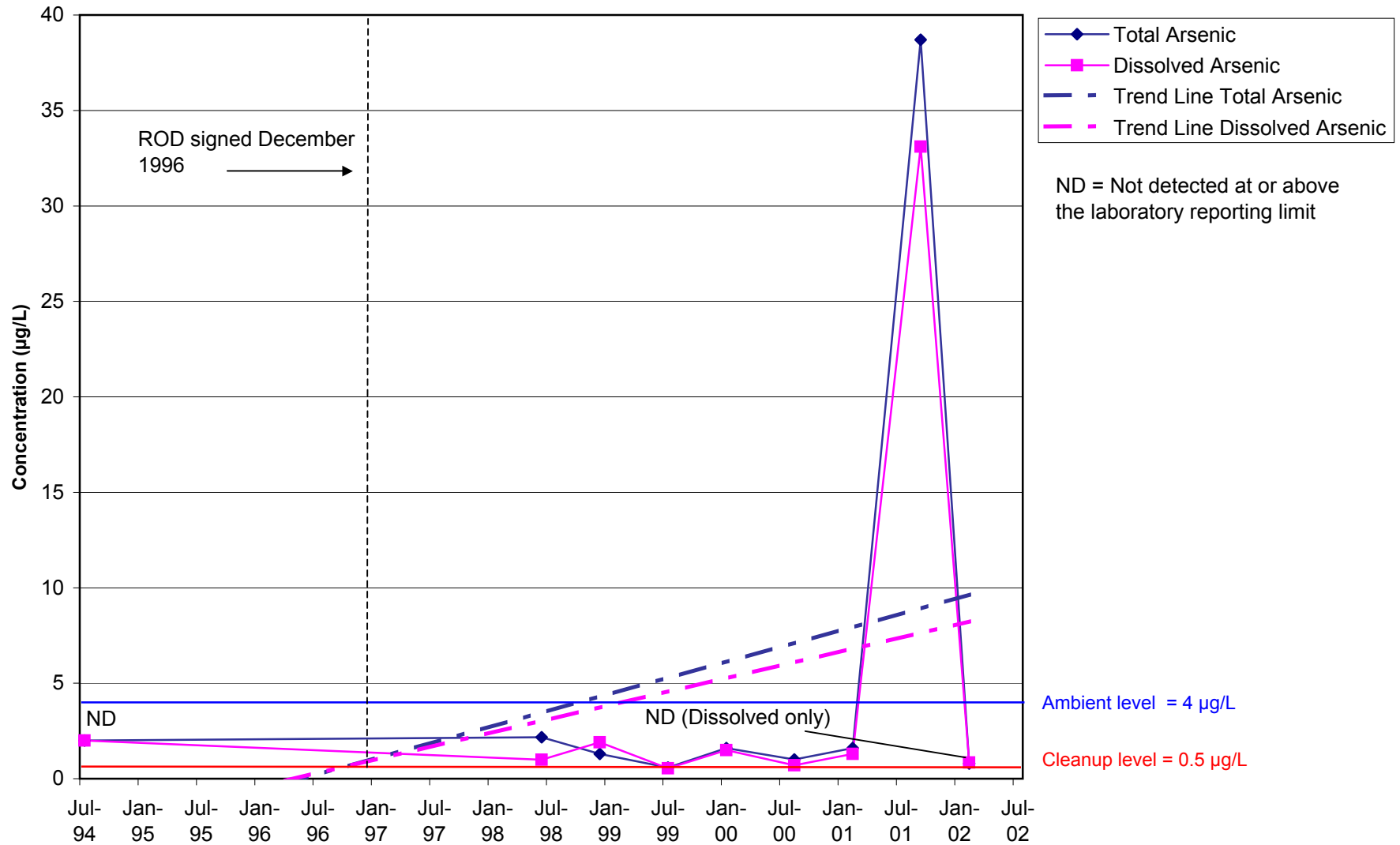


U.S.NAVY

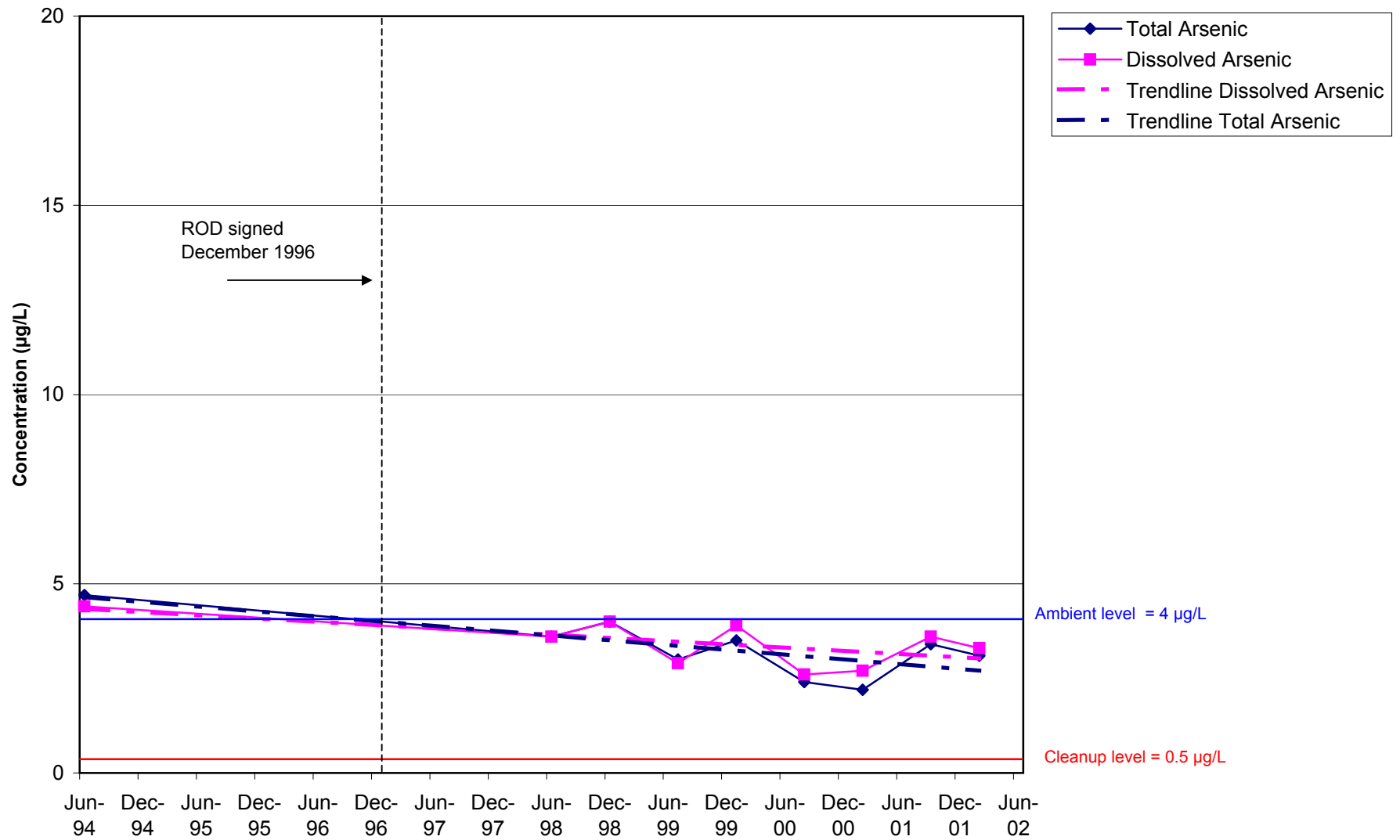
Delivery Order 0017
Bremerton Naval Complex
FIVE-YEAR REVIEW

Figure B-1
OU NSC Long-Term Monitoring Locations

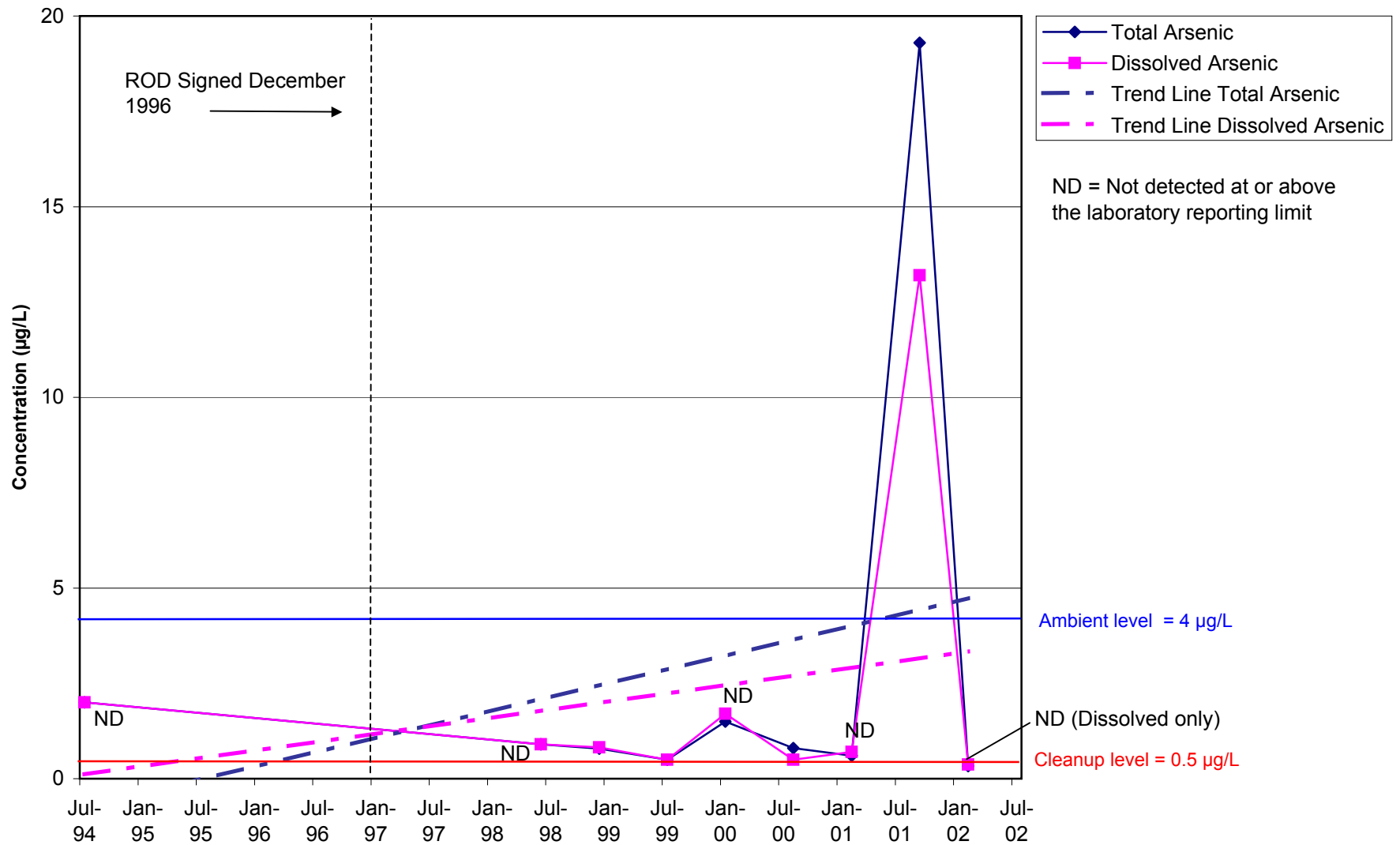
Arsenic in Groundwater - Location MW310 (OU NSC)



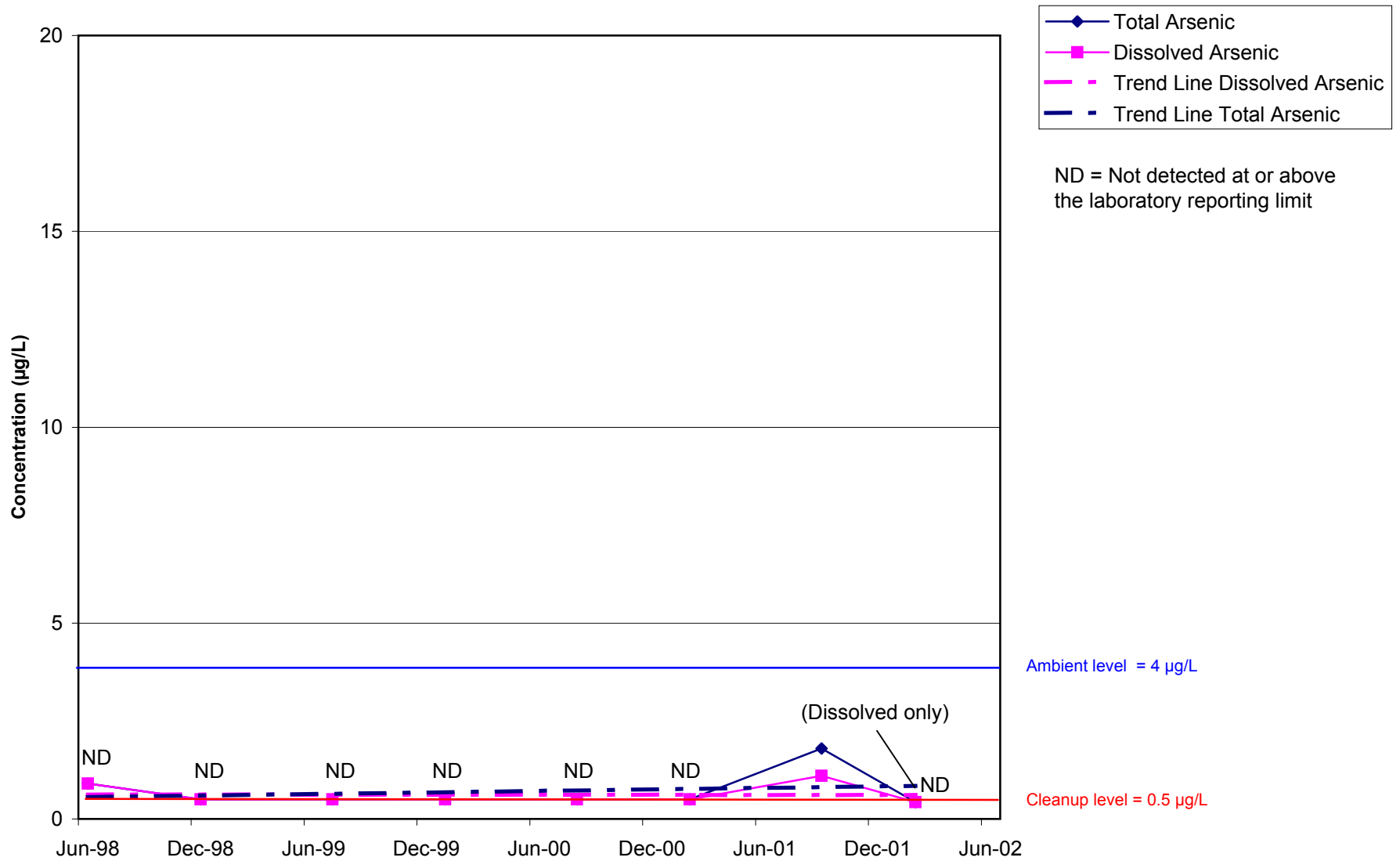
Arsenic in Groundwater - Location MW346 (OU NSC)



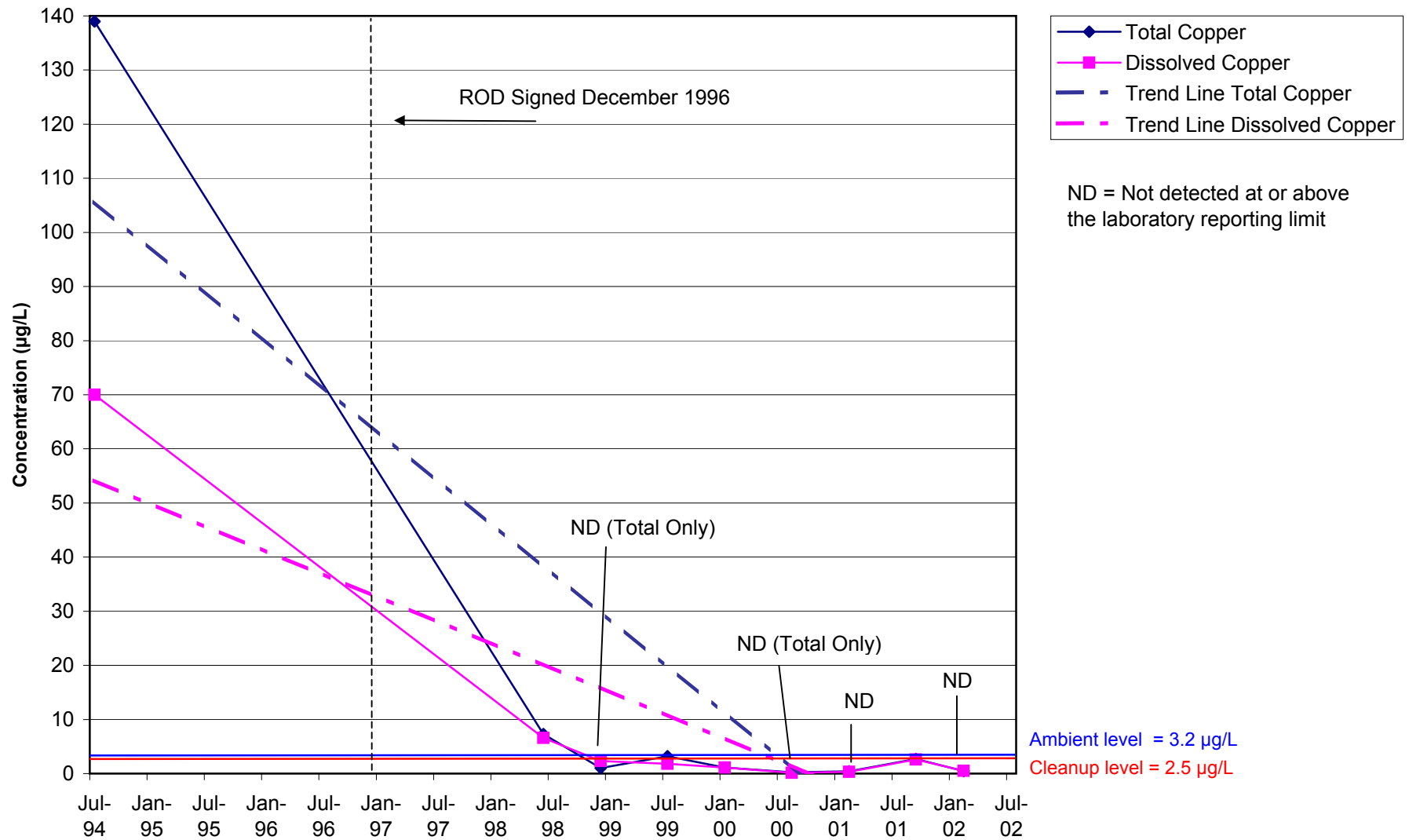
Arsenic in Groundwater - Location MW386 (OU NSC)



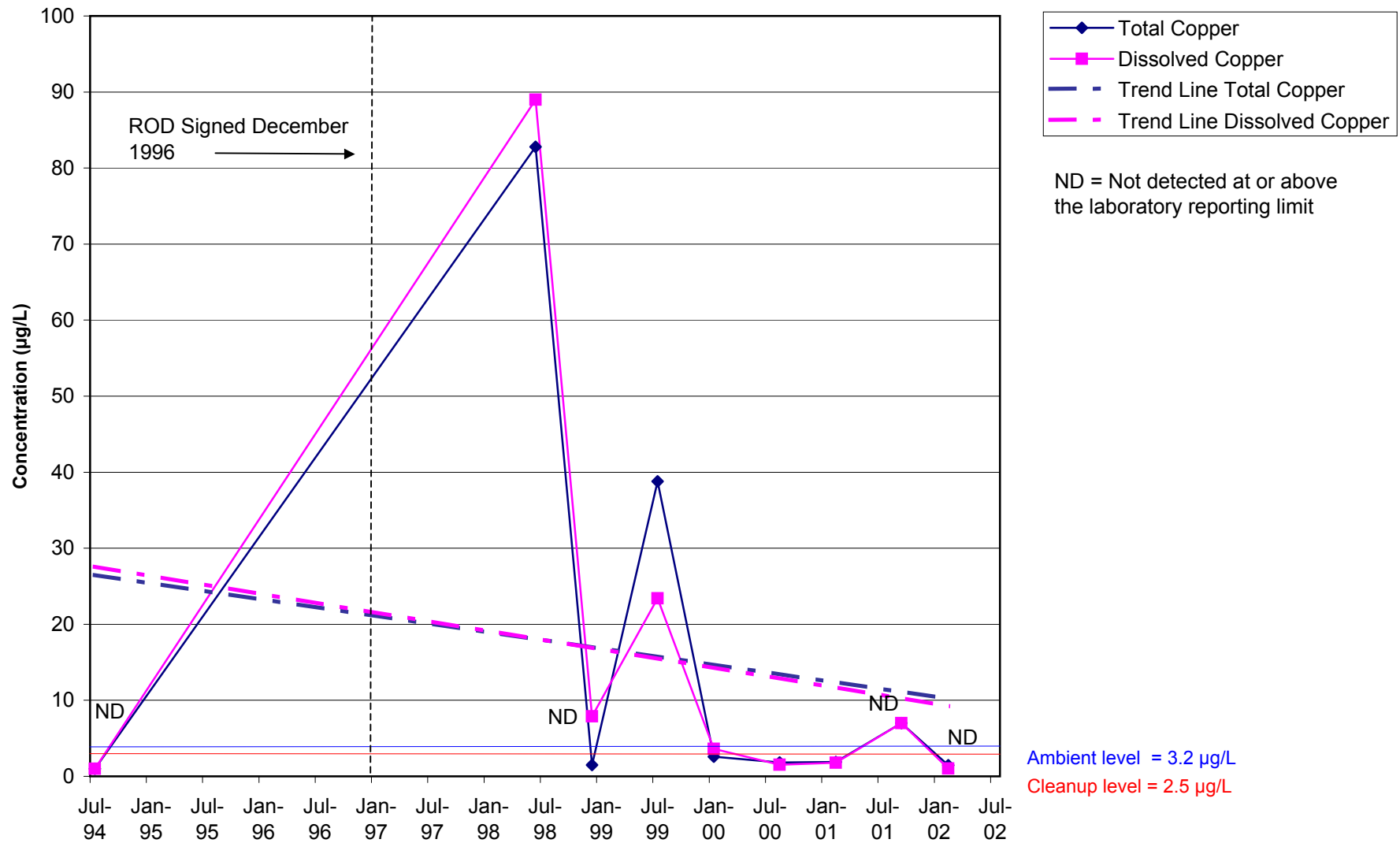
Arsenic in Groundwater - Location MW392 (OU NSC)



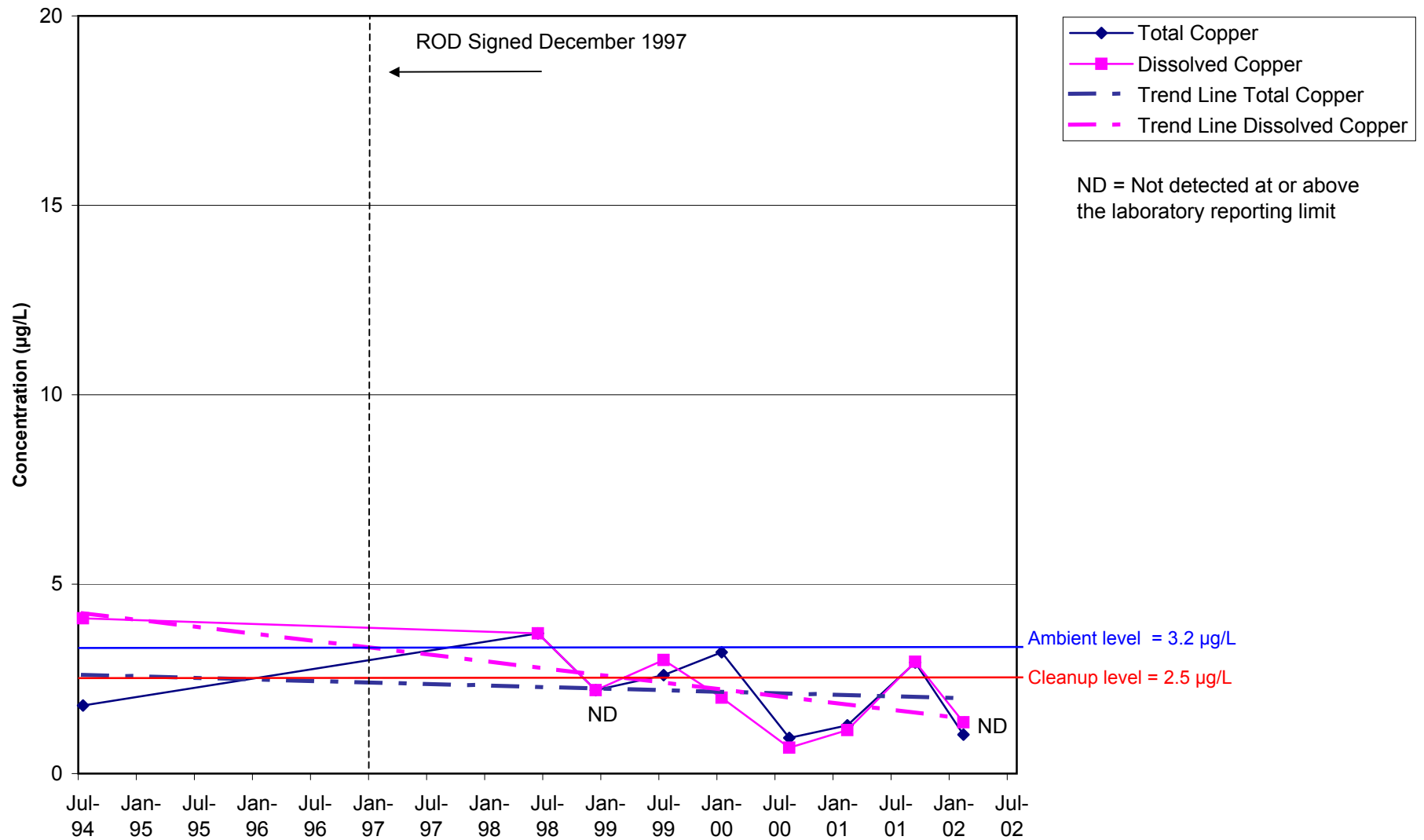
Copper in Groundwater - Location MW310 (OU NSC)



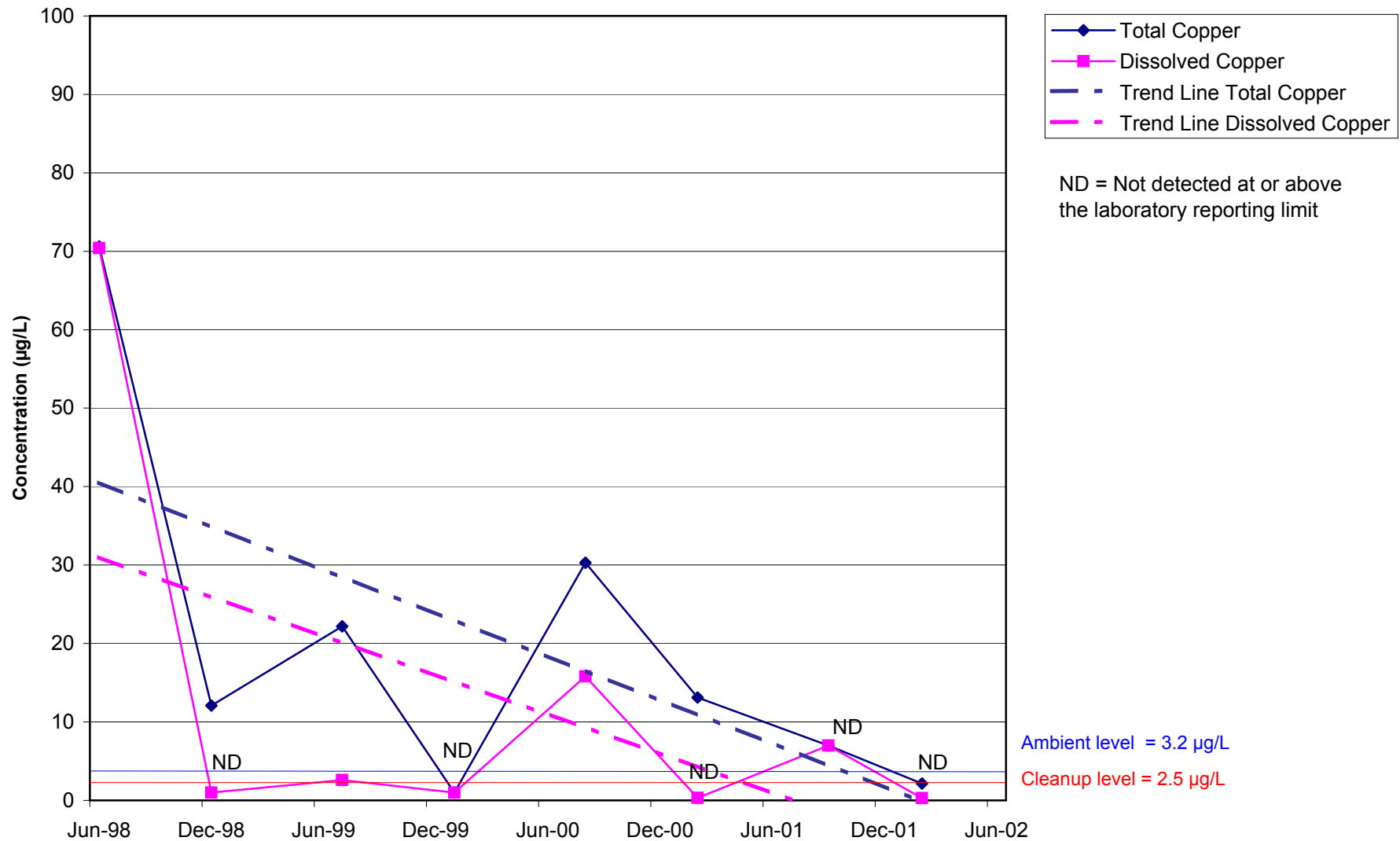
Copper in Groundwater - Location MW380 (OU NSC)



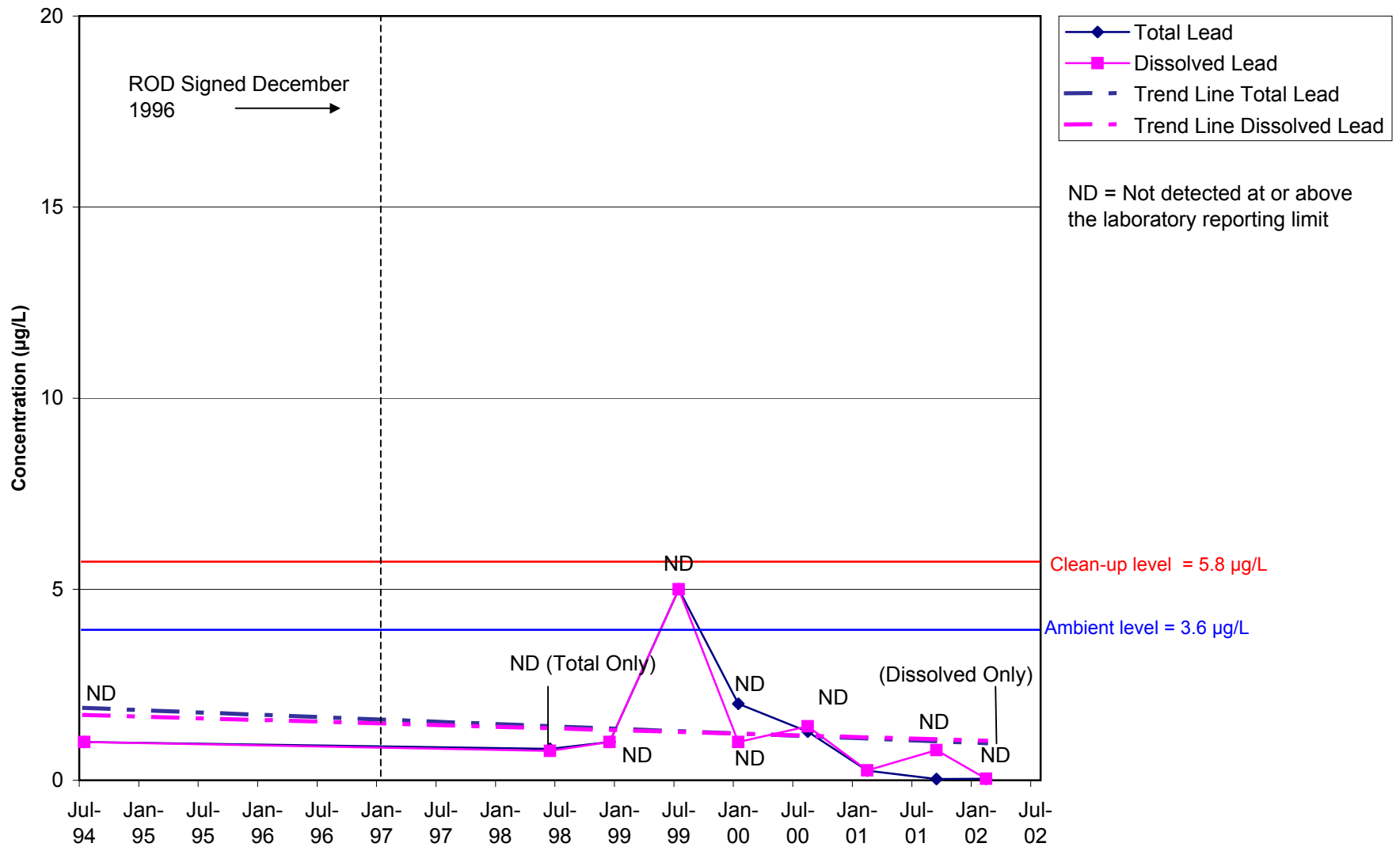
Copper in Groundwater - Location MW386 (OU NSC)



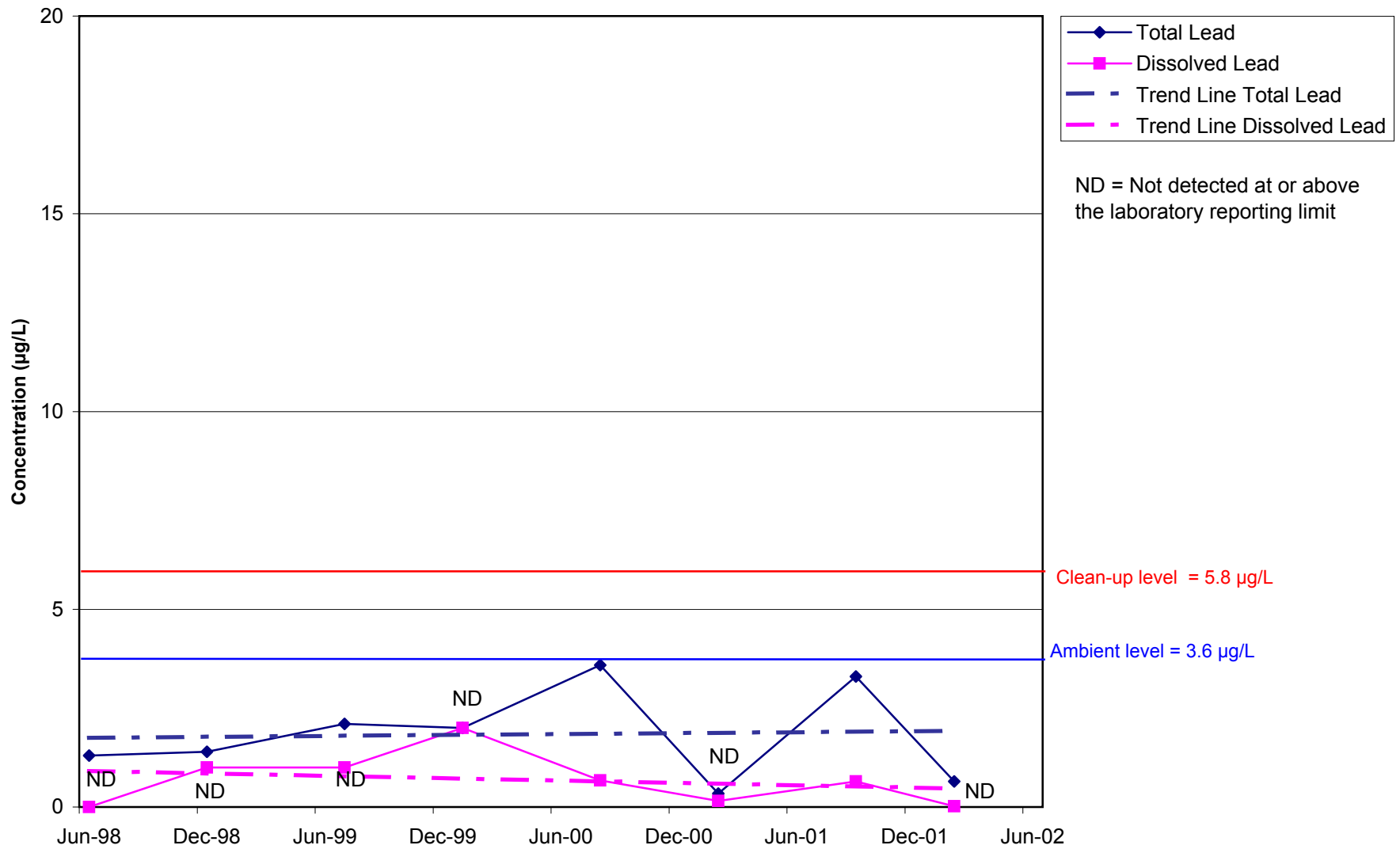
Copper in Groundwater - Location MW392 (OU NSC)



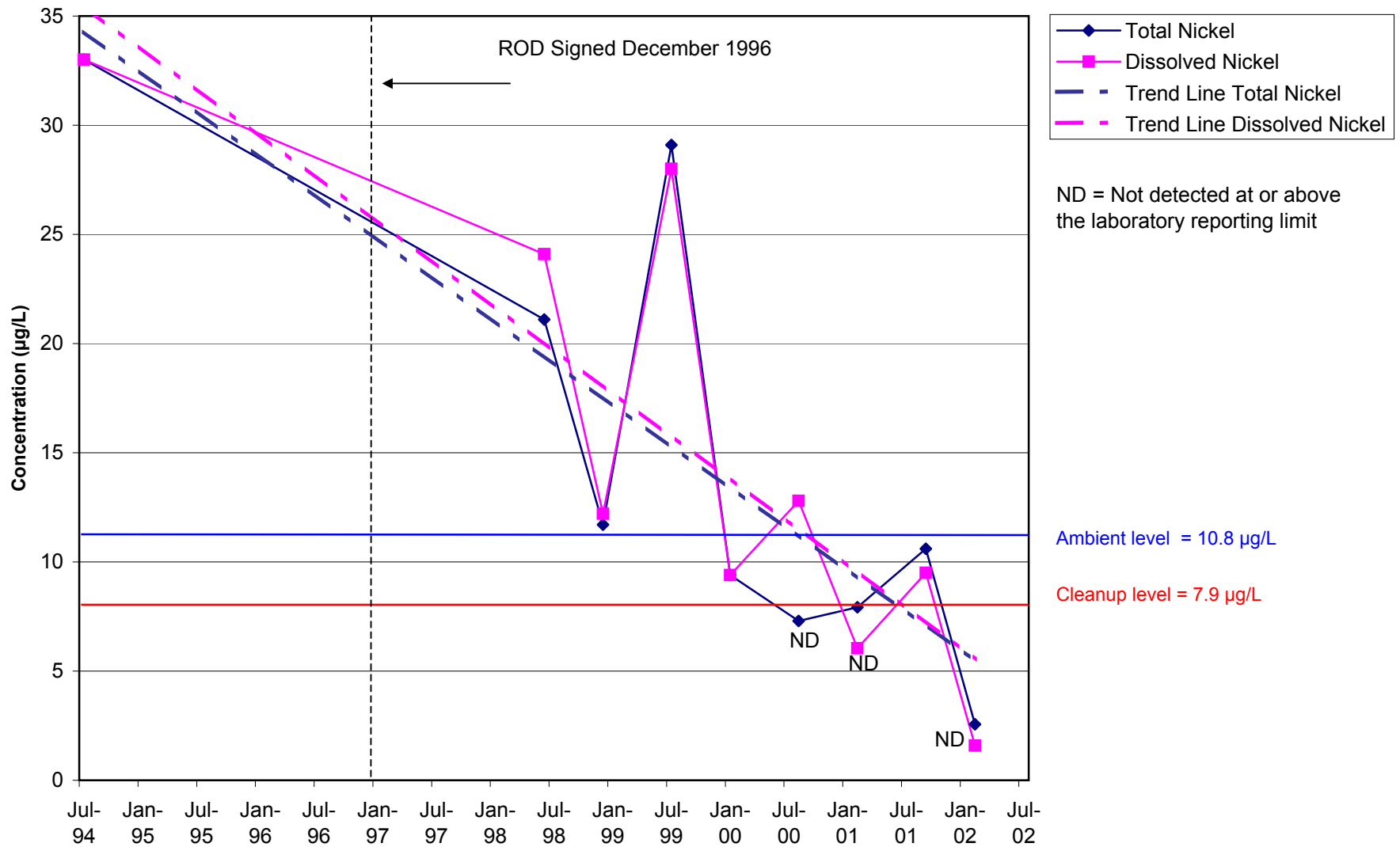
Lead in Groundwater - Location MW380 (OU NSC)



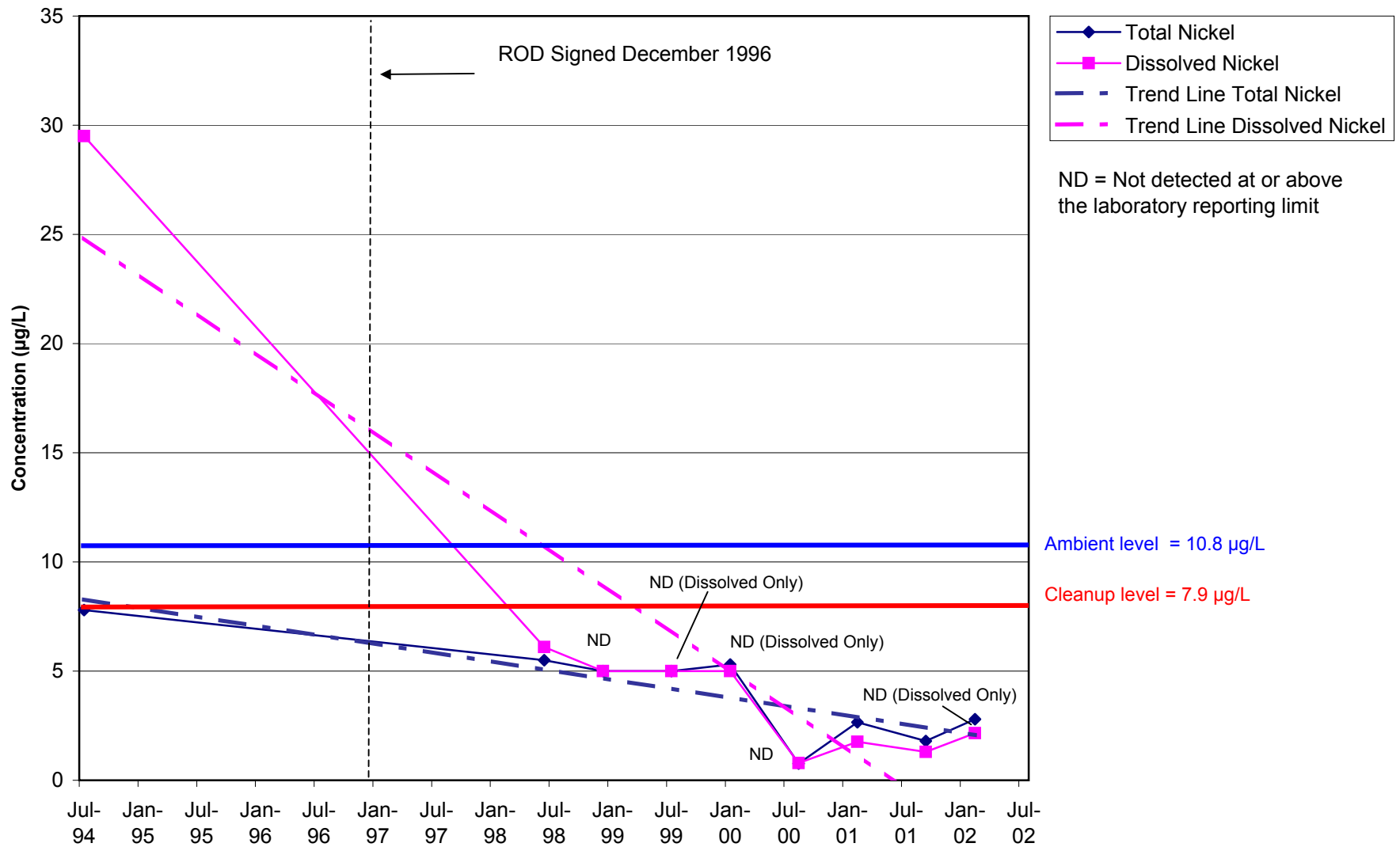
Lead in Groundwater - Location MW392 (OU NSC)



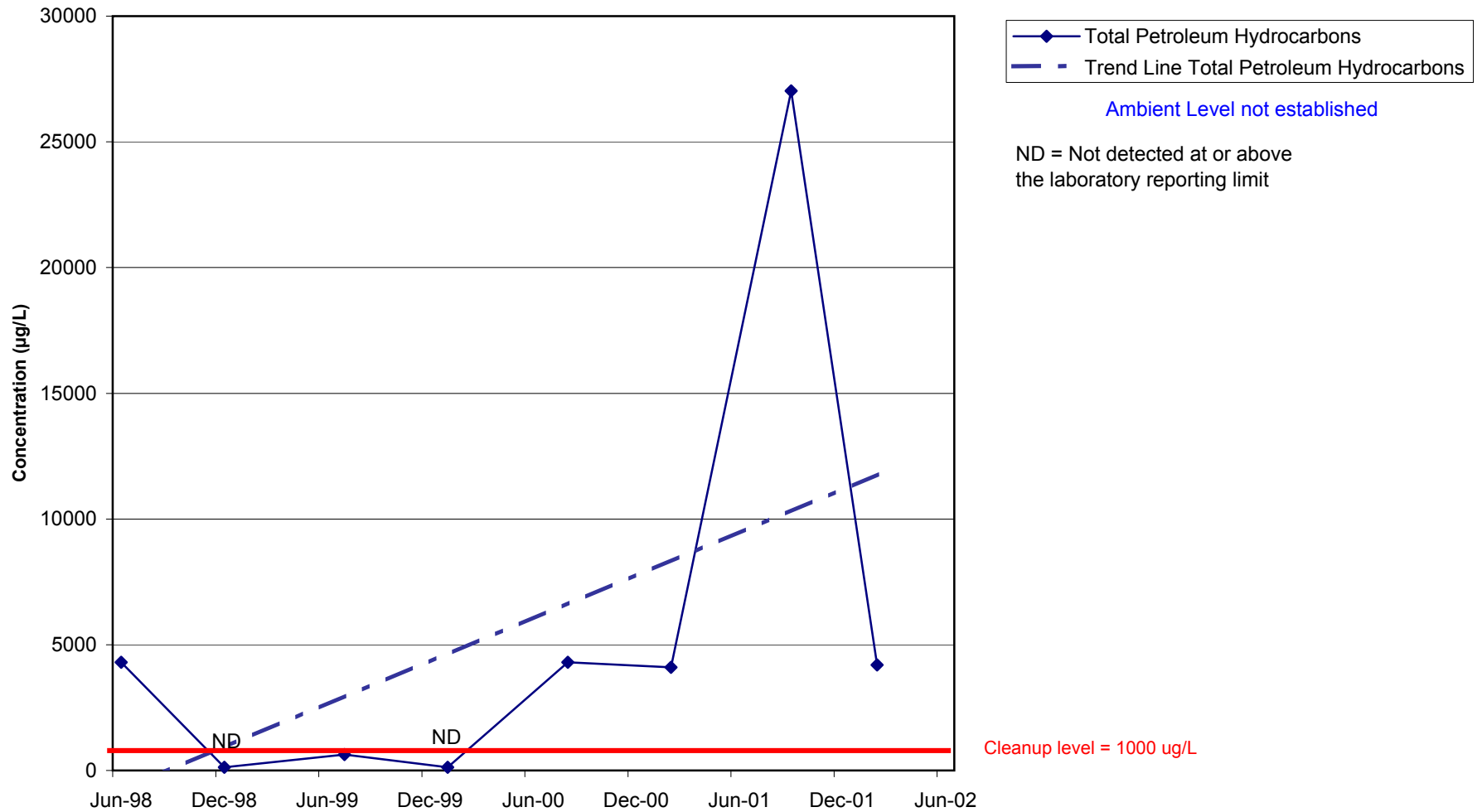
Nickel in Groundwater - Location MW380 (OU NSC)



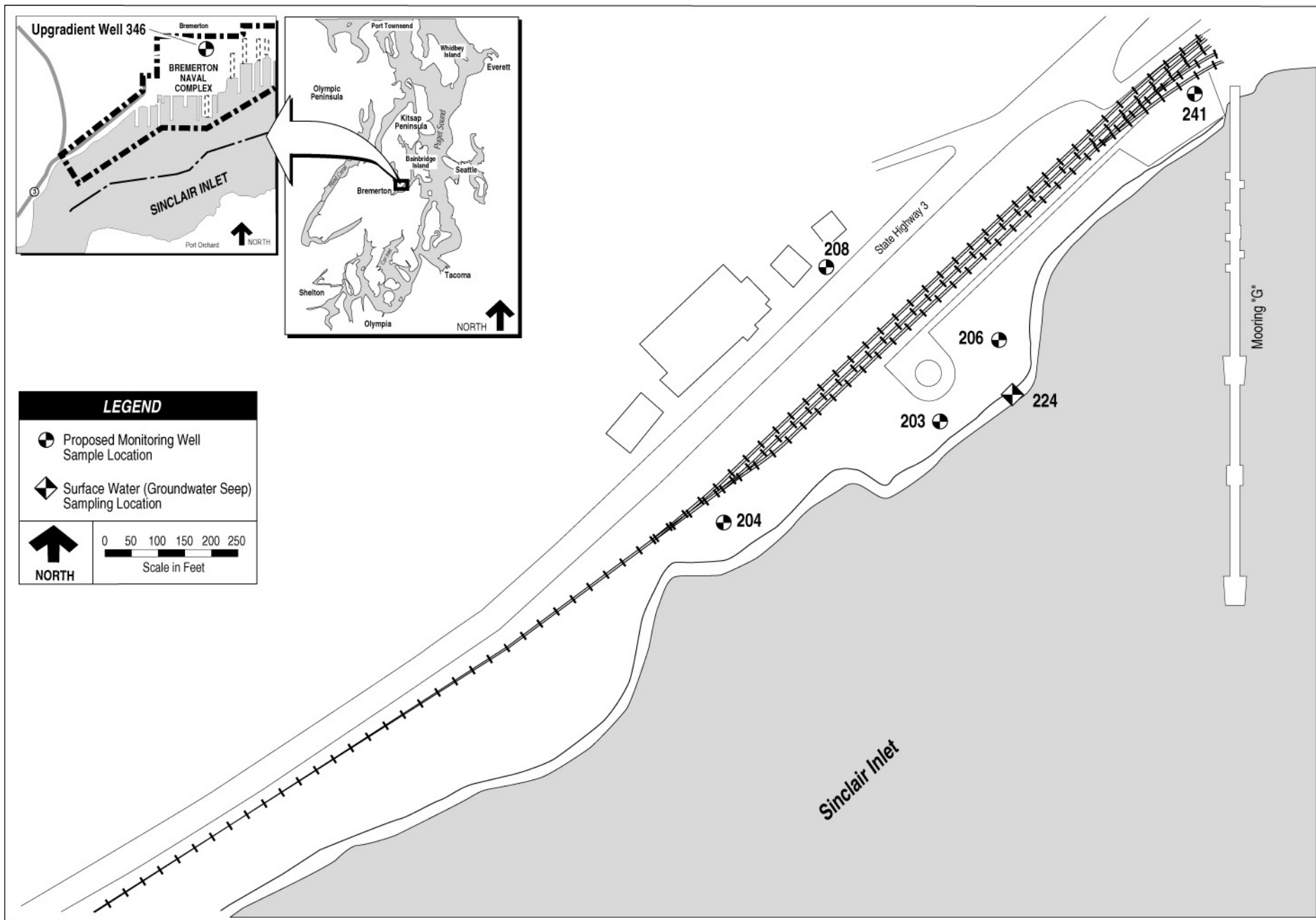
Nickel in Groundwater - Location MW386 (OU NSC)



Total Petroleum Hydrocarbons in Groundwater - Location MW392 (OU NSC)



OU A

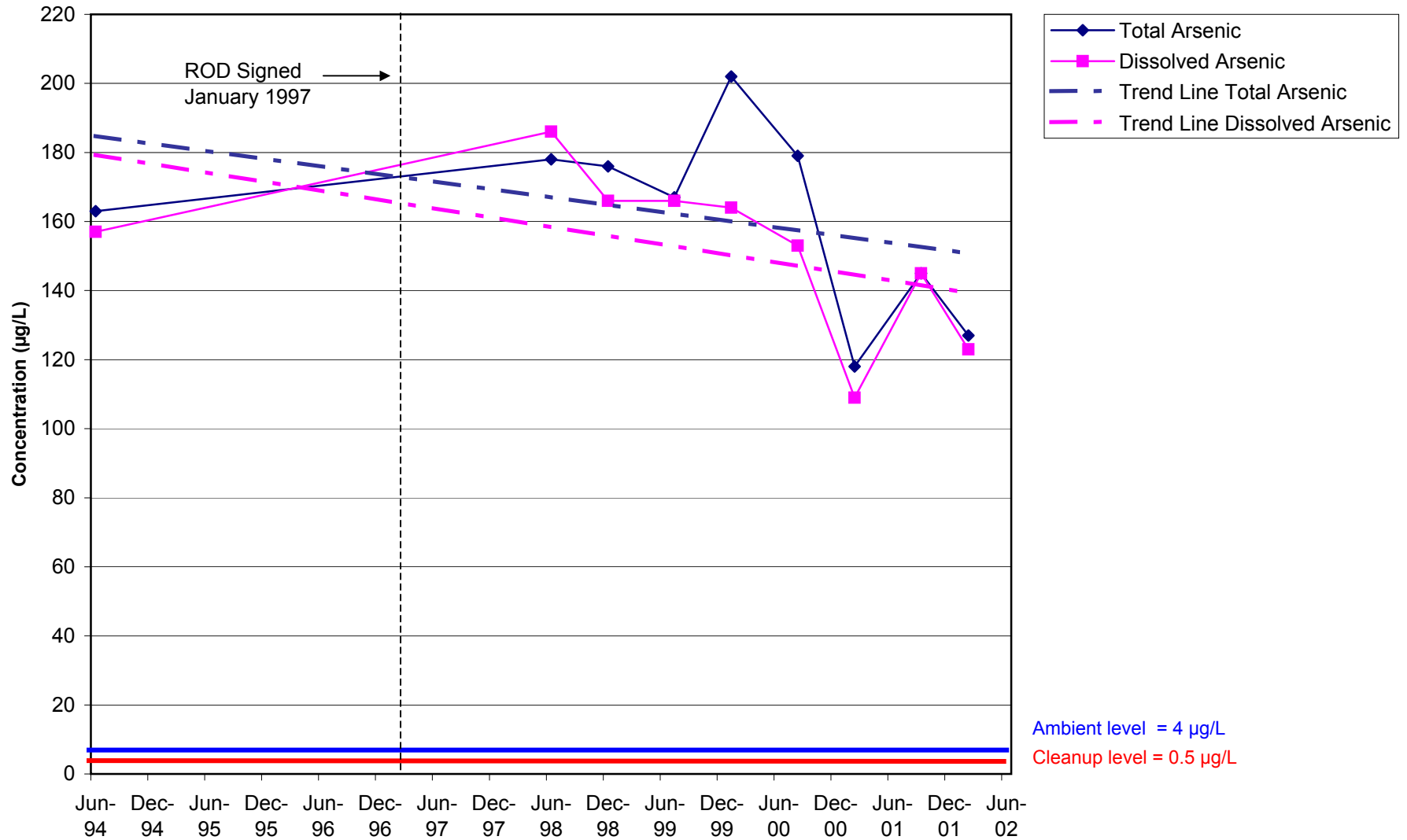


U.S.NAVY

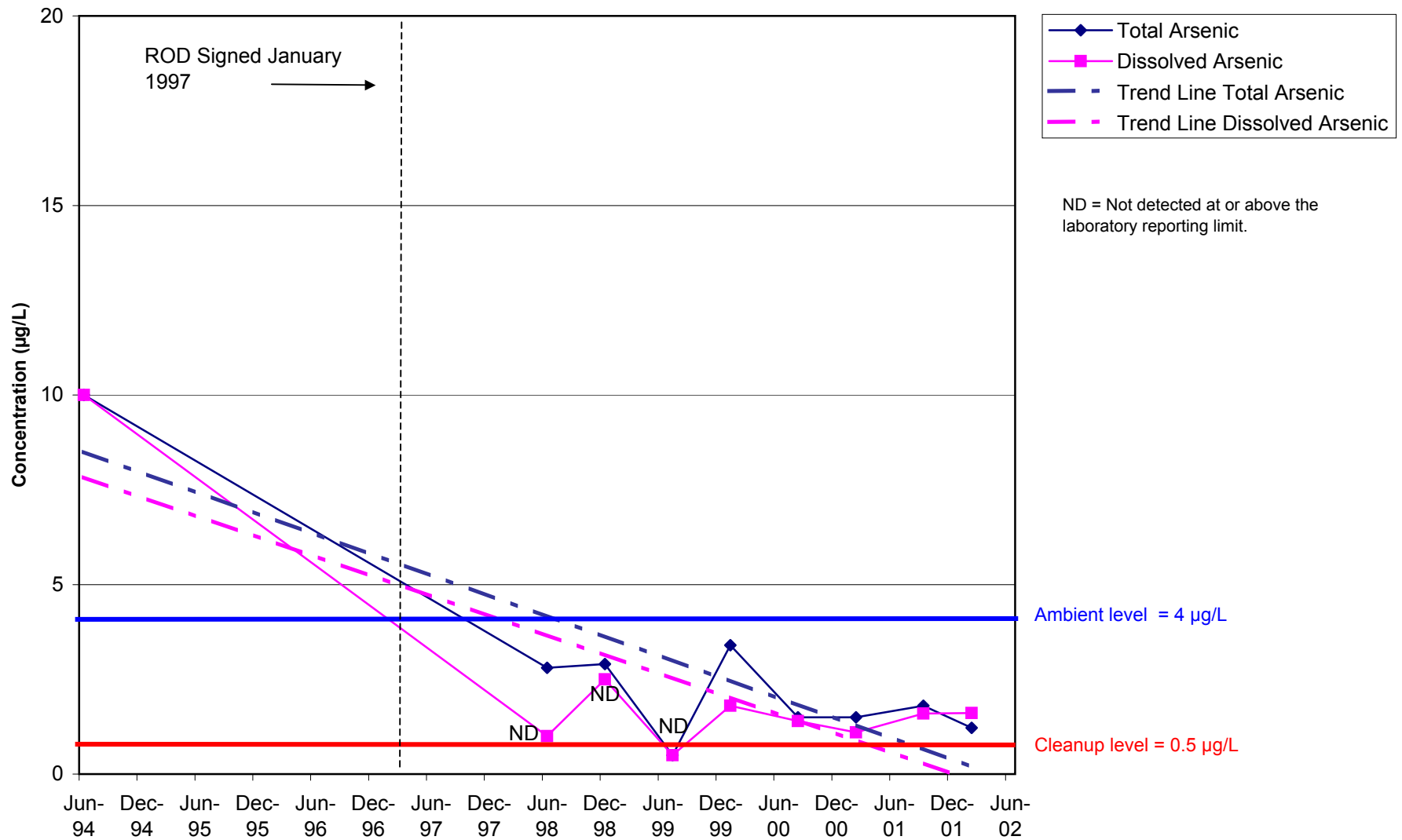
Delivery Order 0017
Bremerton Naval Complex
FIVE-YEAR REVIEW

Figure B-2
OU A Long-Term Monitoring Locations

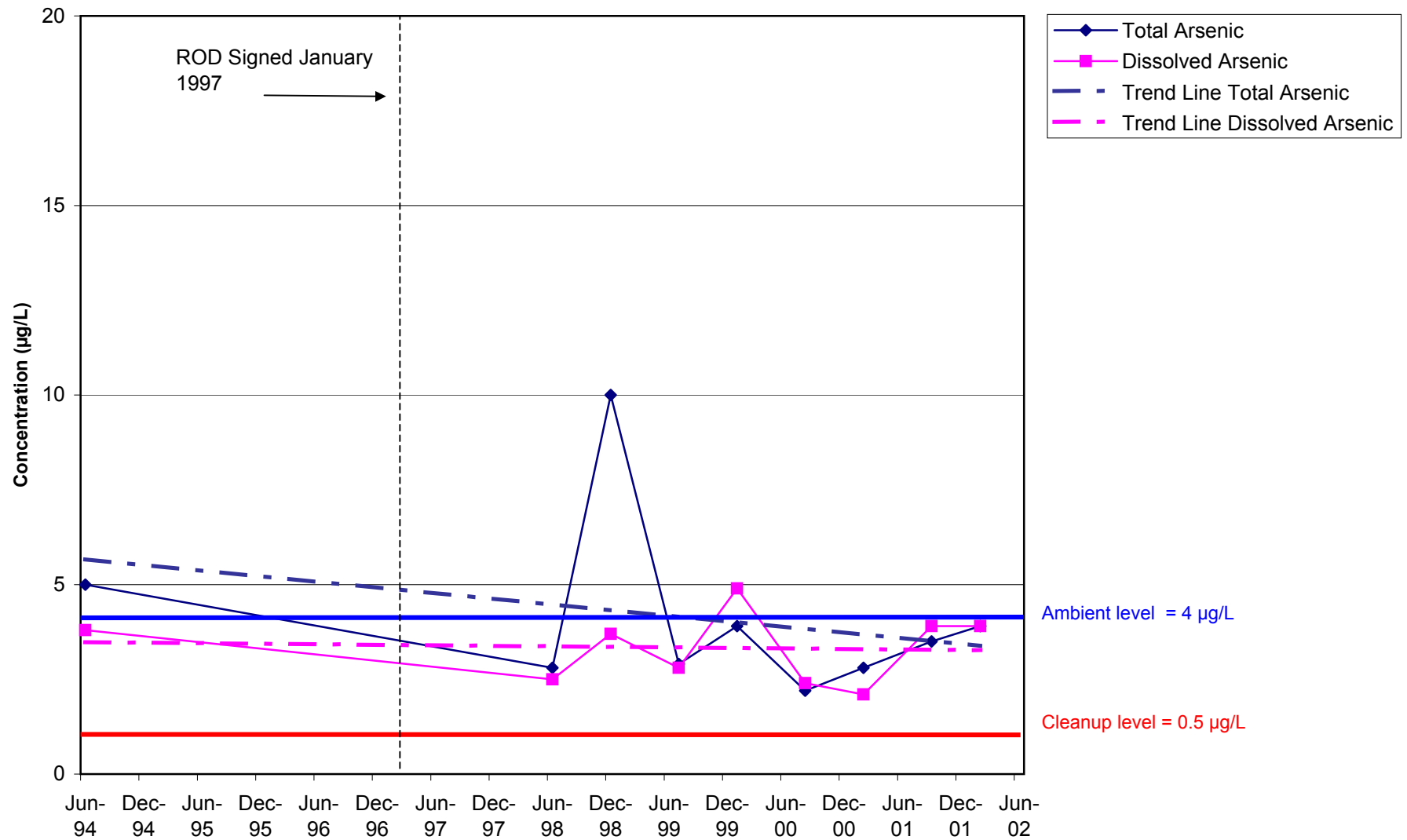
Arsenic in Groundwater - Location MW203 (OU A)



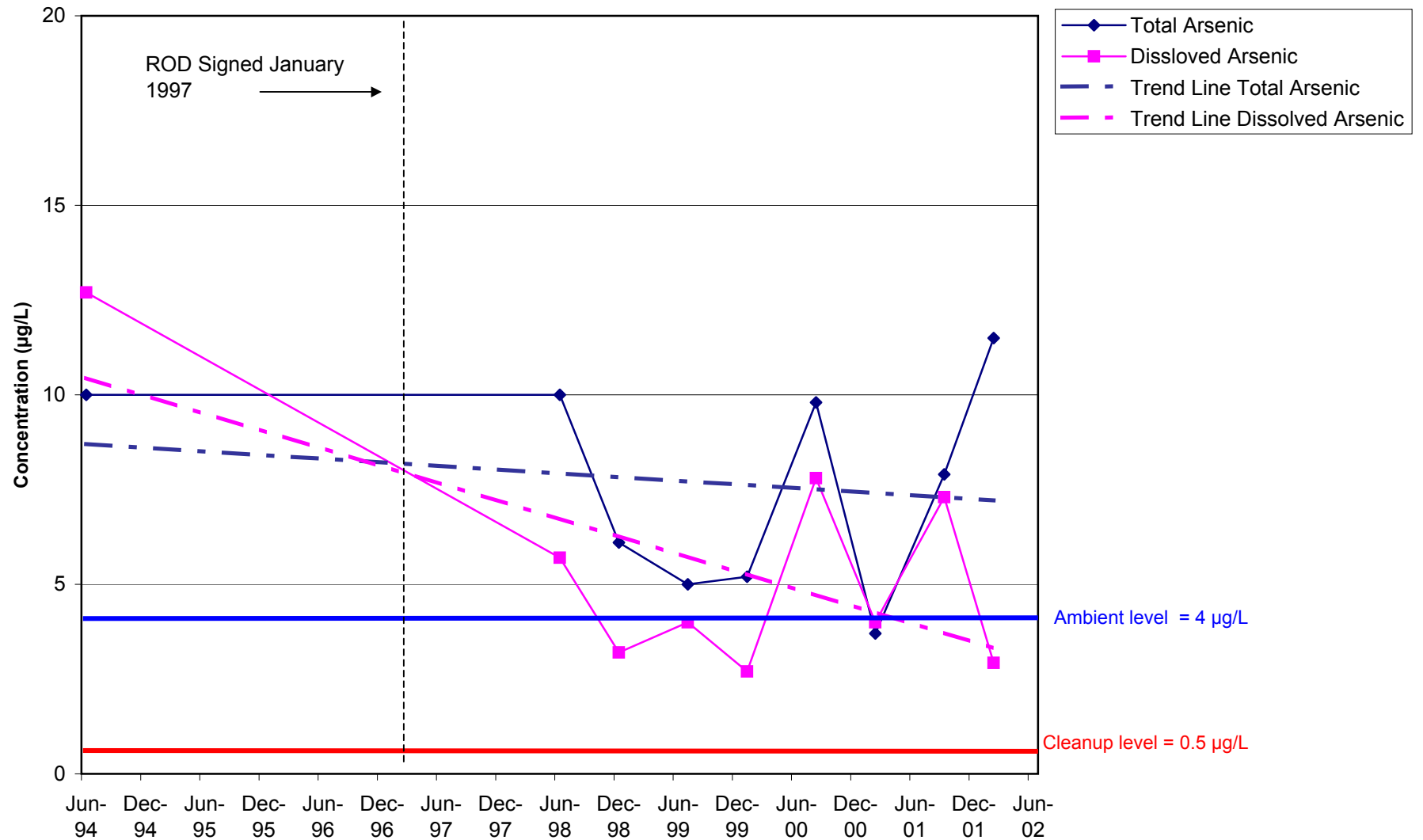
Arsenic in Groundwater - Location MW204 (OU A)



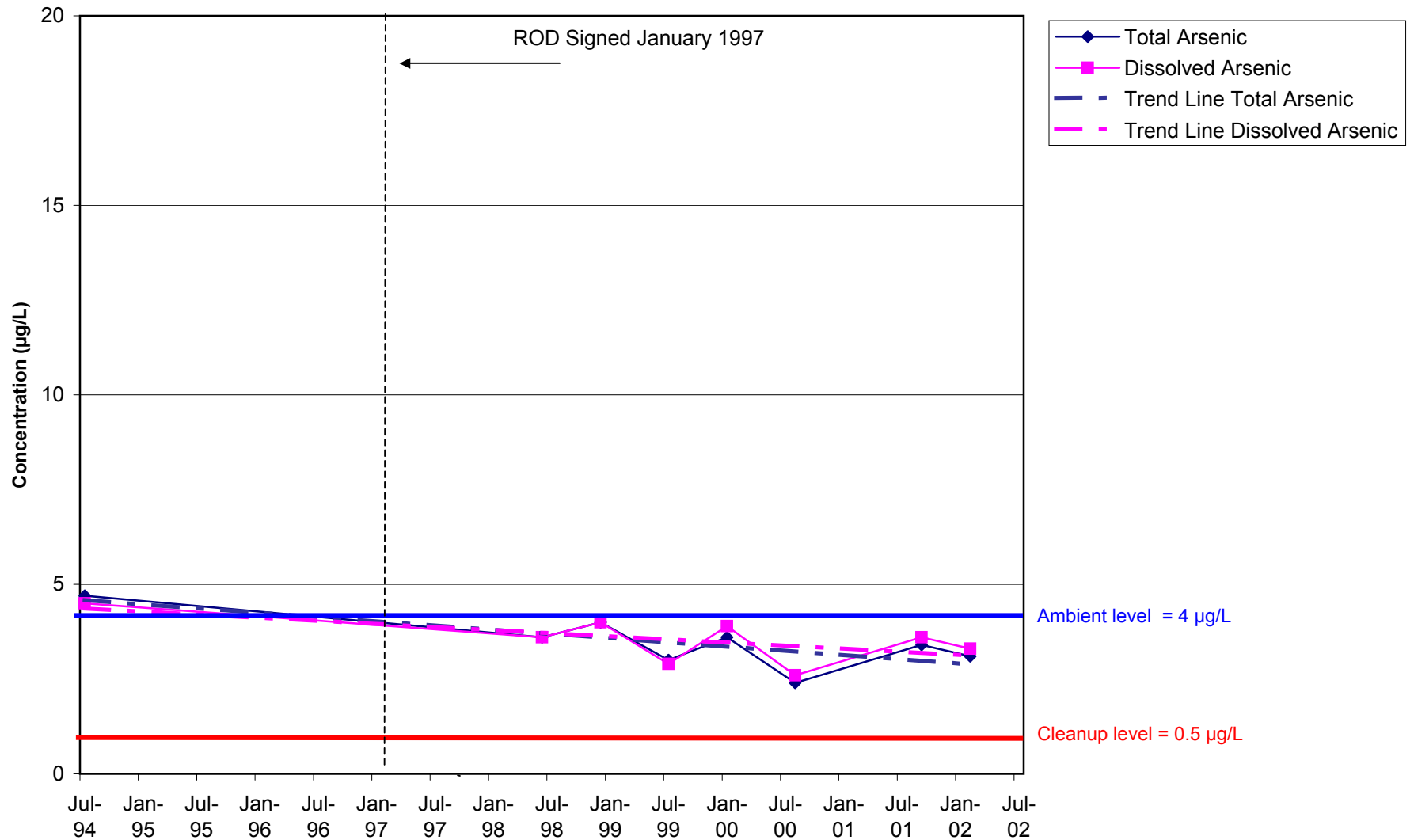
Arsenic in Groundwater - Location MW206 (OU A)



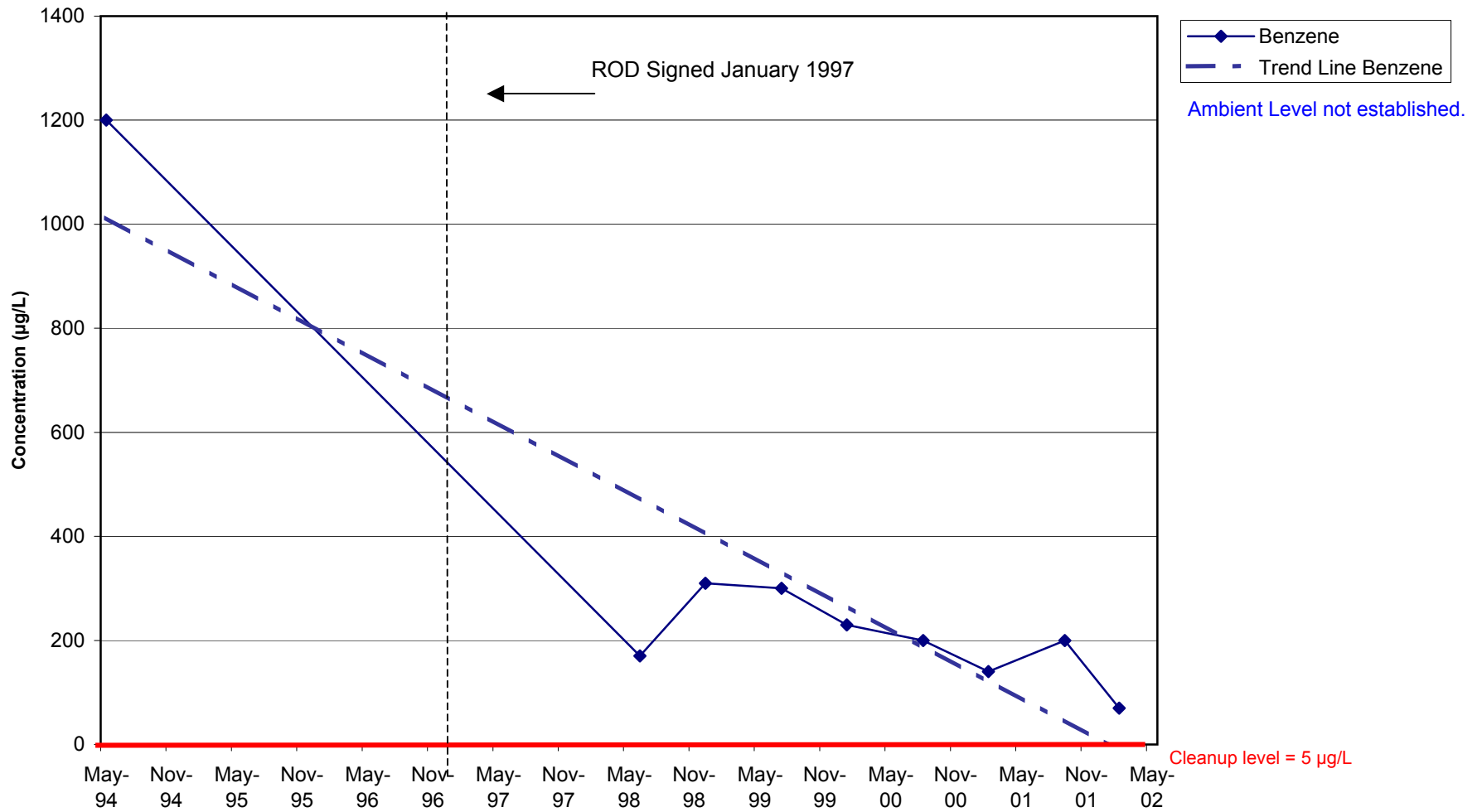
Arsenic in Groundwater - Location MW241 (OU A)



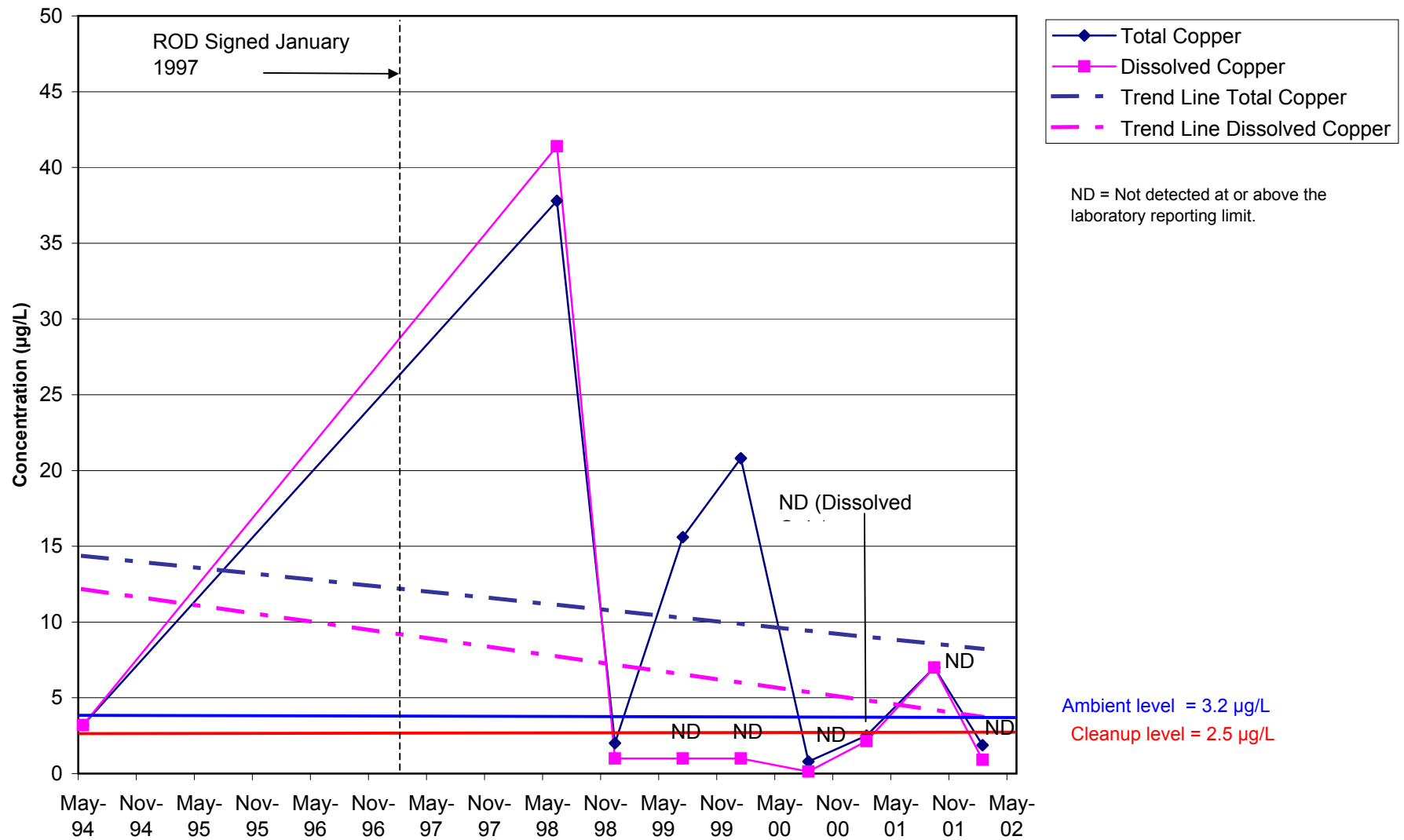
Arsenic in Groundwater - Location MW346 (OU A)



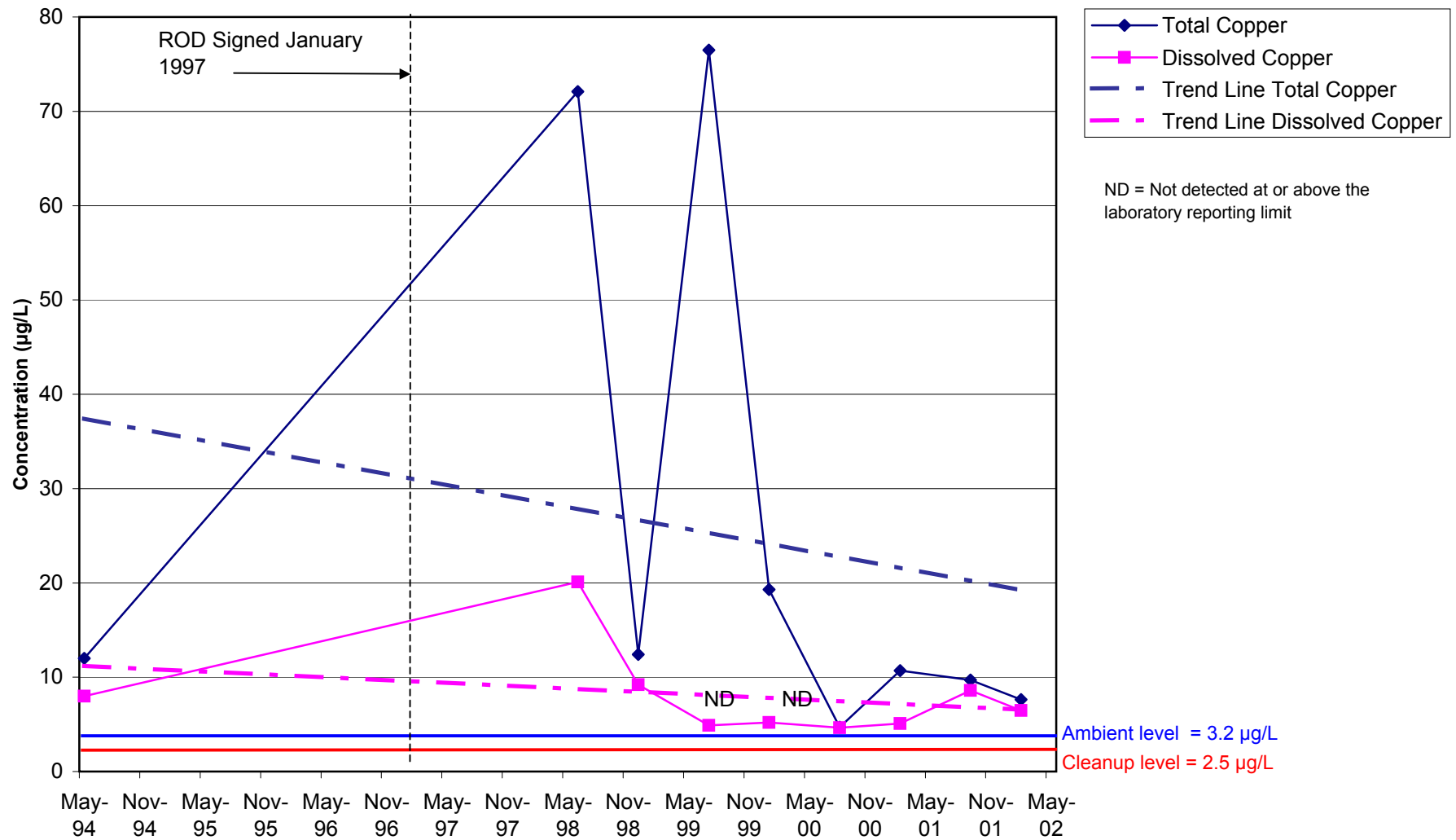
Benzene in Groundwater-Location MW208 (OU A)



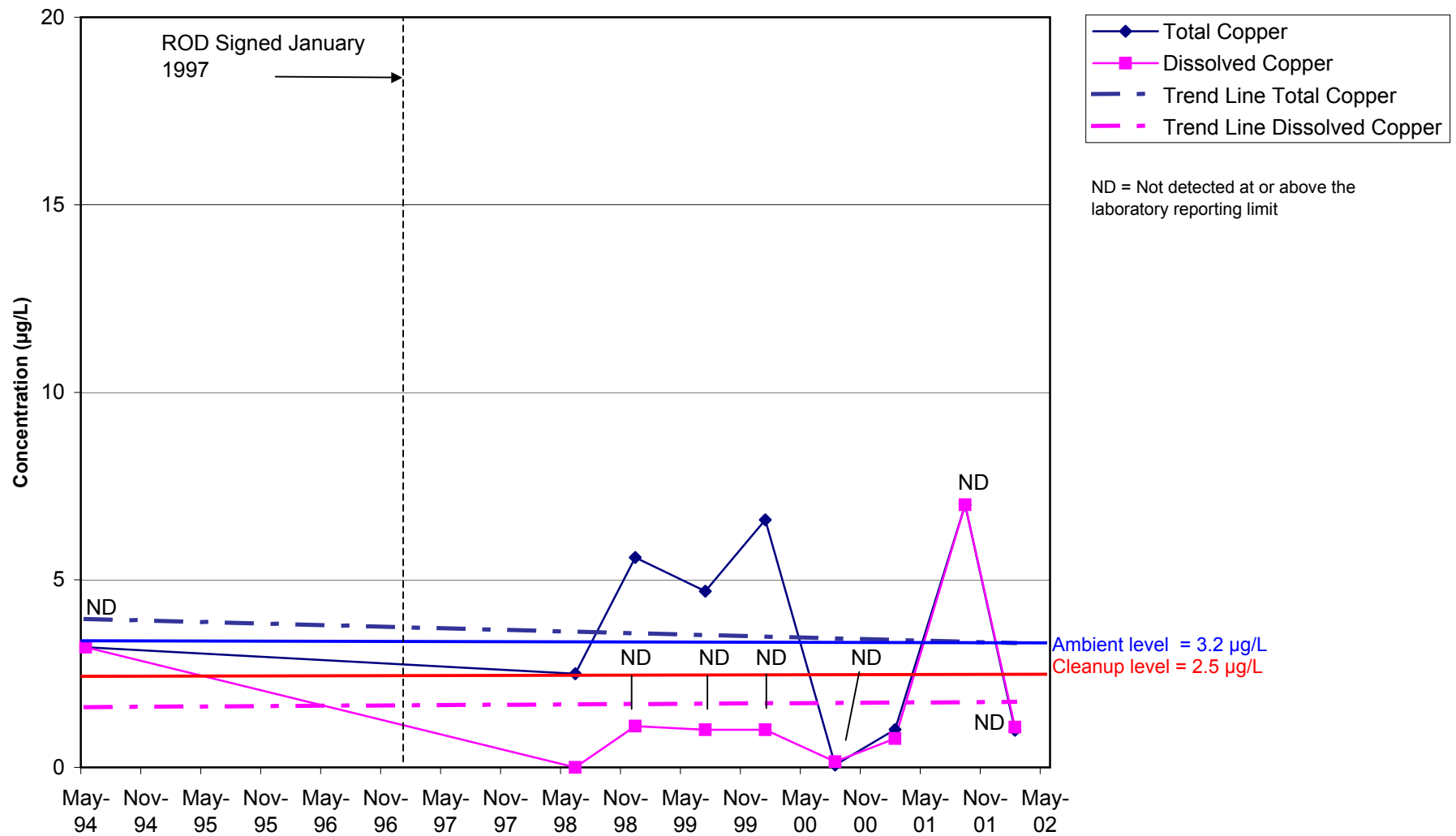
Copper in Groundwater - Location MW203 (OU A)



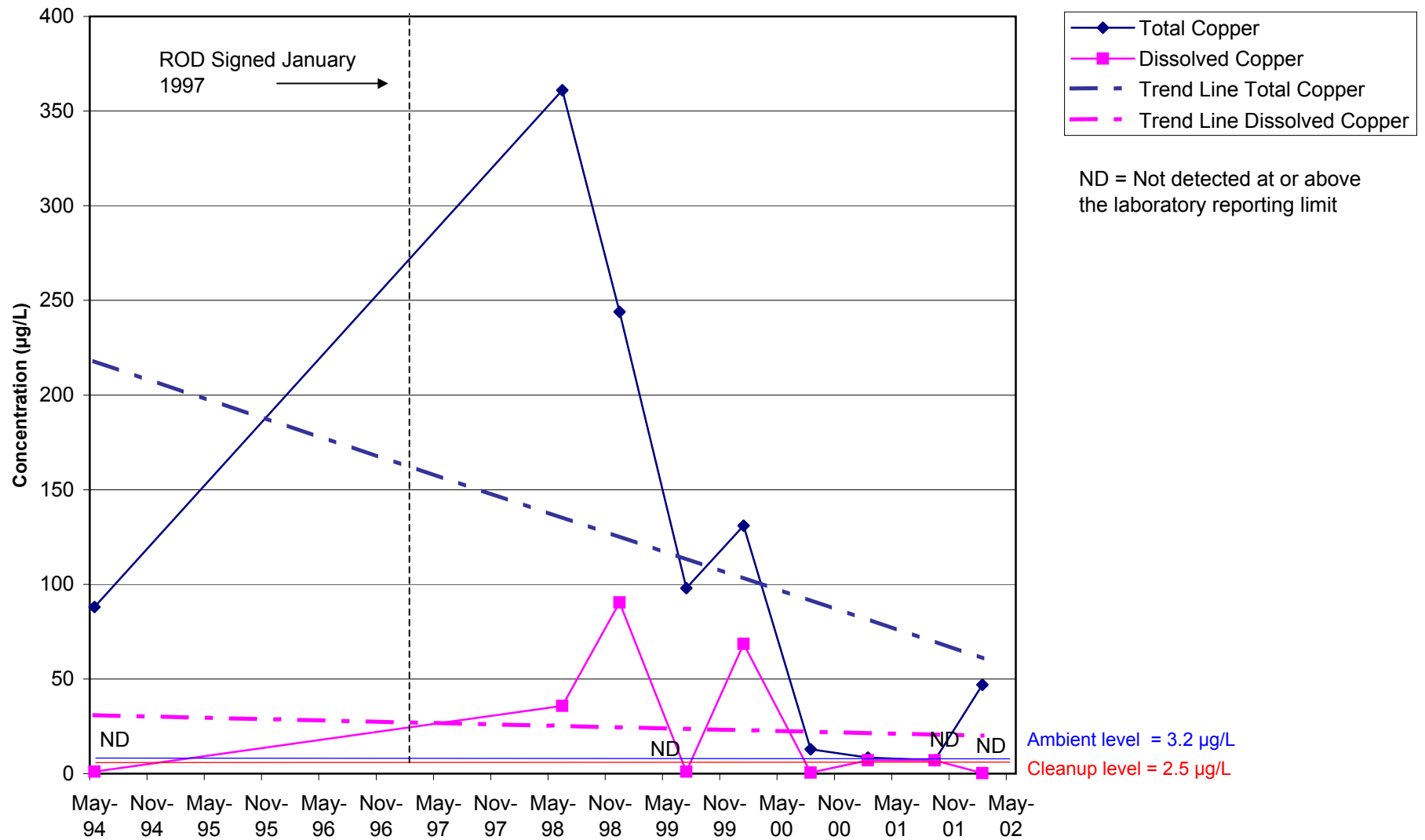
Copper in Groundwater - Location MW204 (OU A)



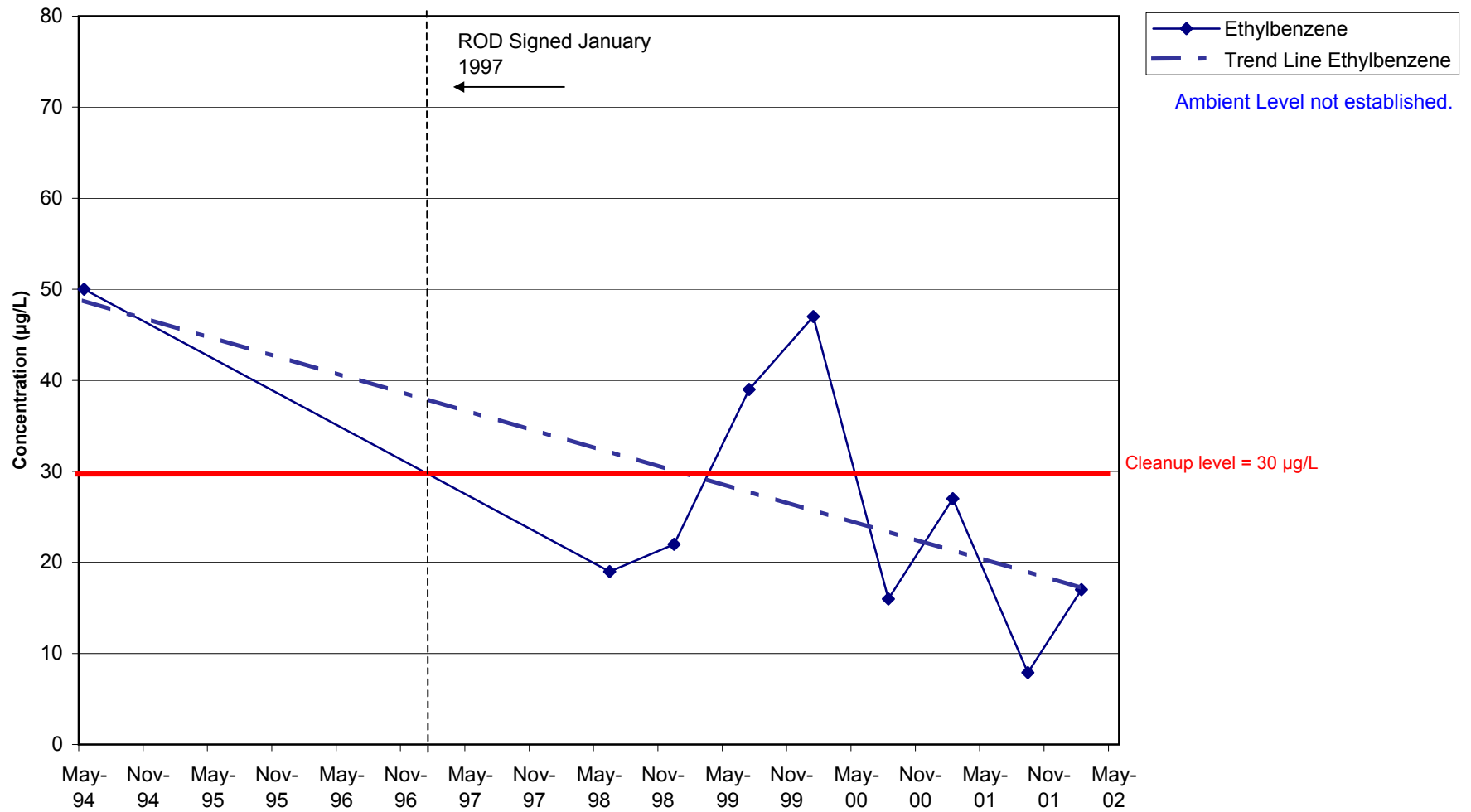
Copper in Groundwater - Location MW206 (OU A)



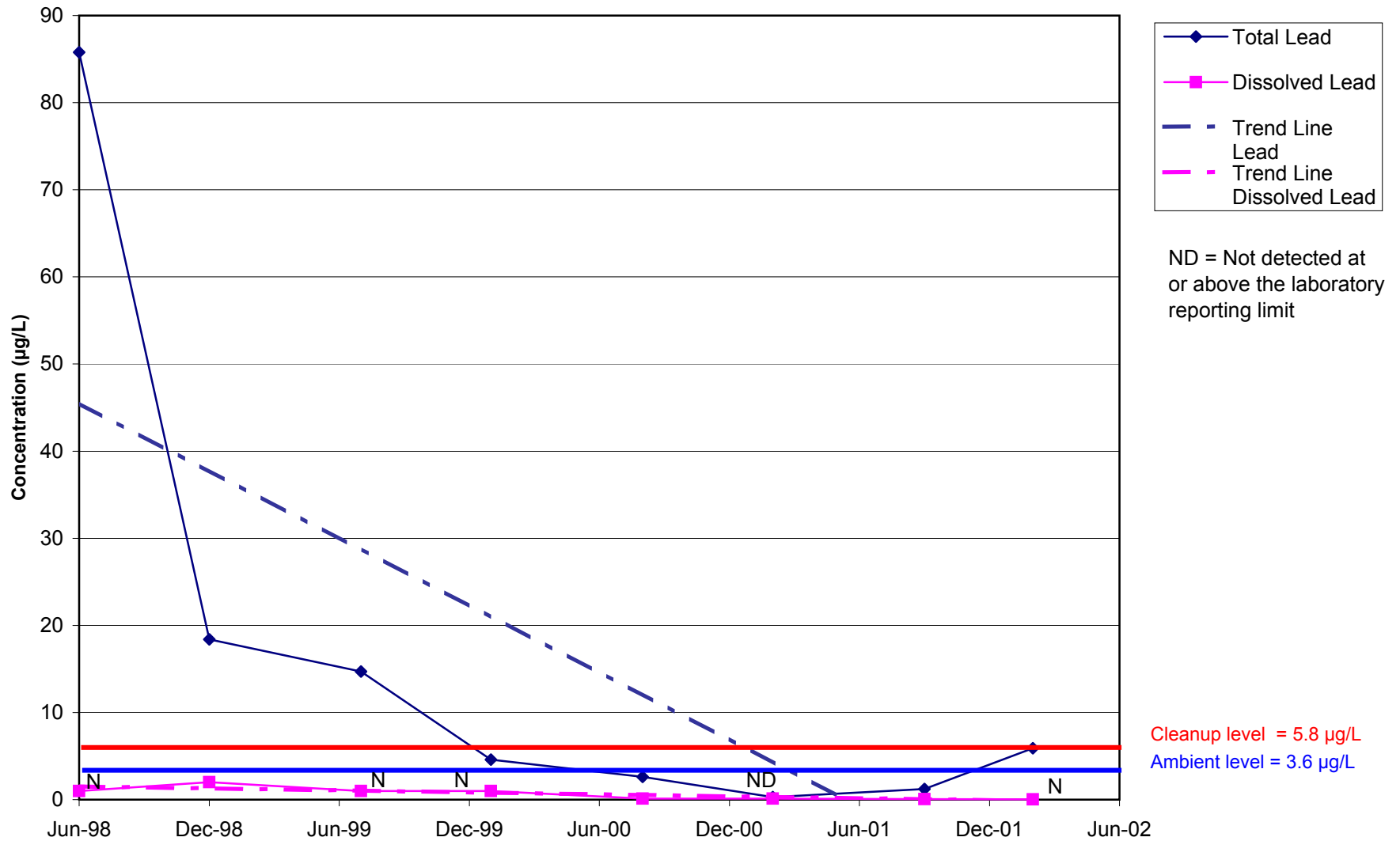
Copper in Groundwater - Location MW241 (OU A)



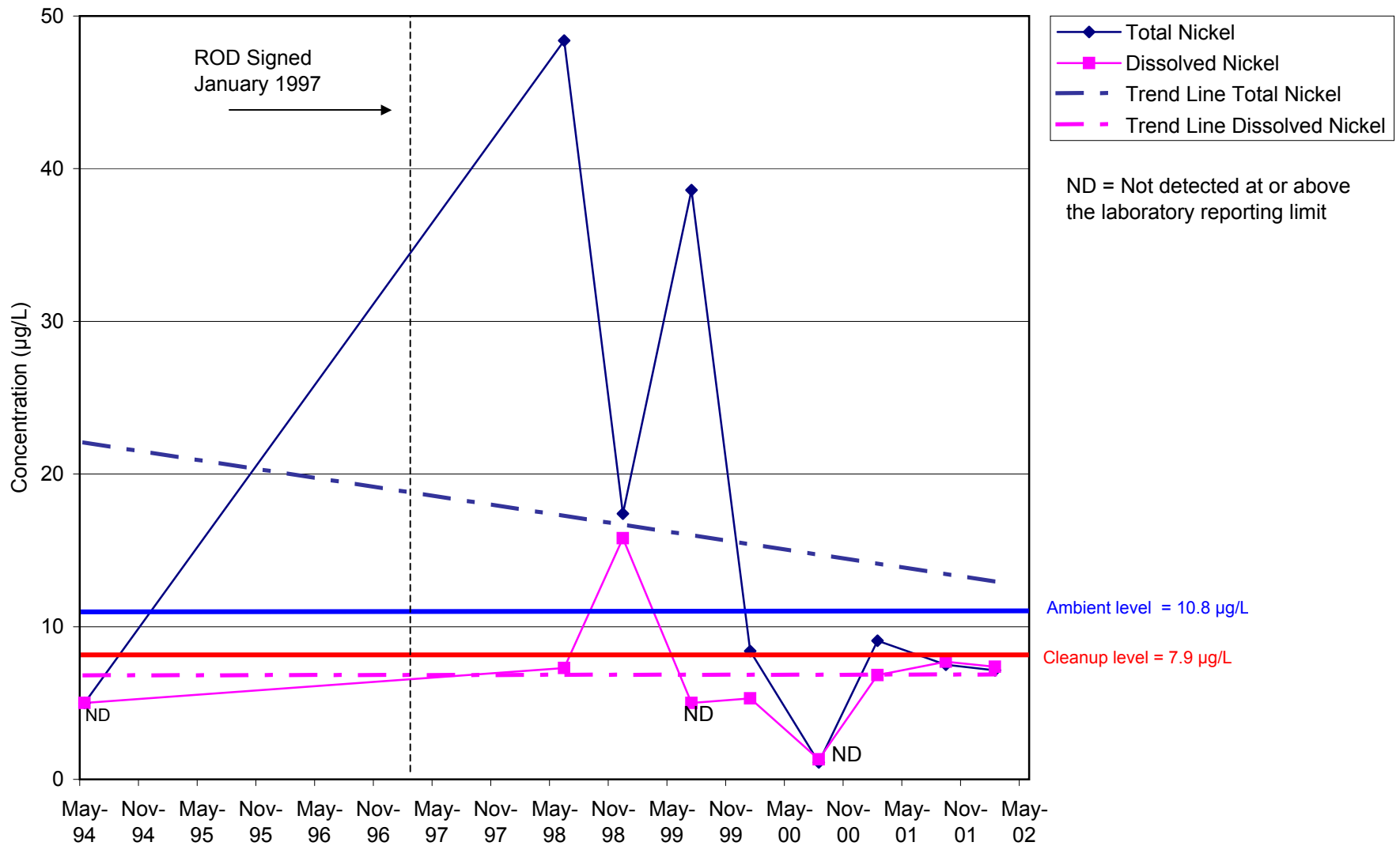
Ethylbenzene in Groundwater-Location MW208 (OU A)



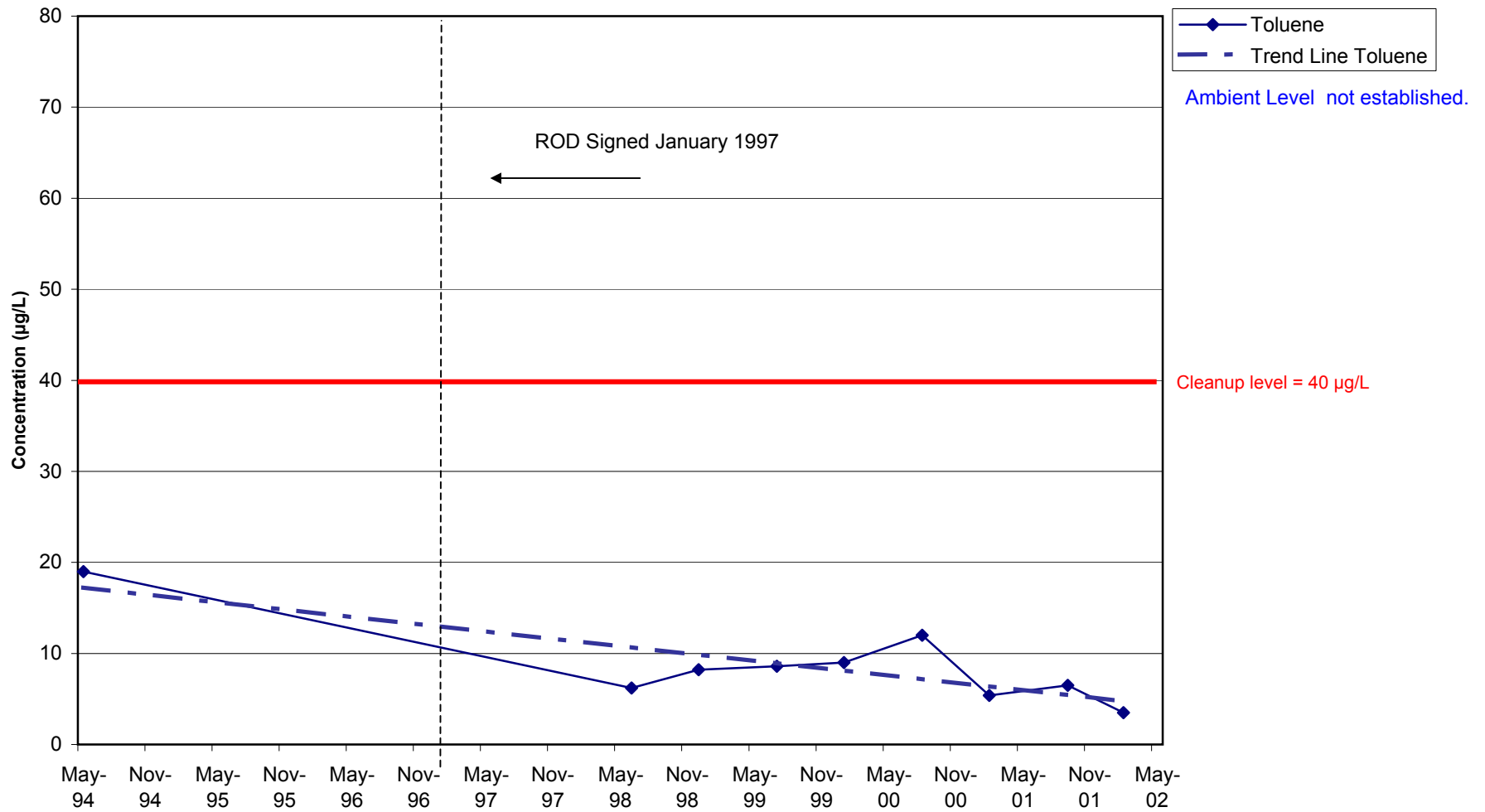
Lead in Groundwater - Location MW241 (OU A)



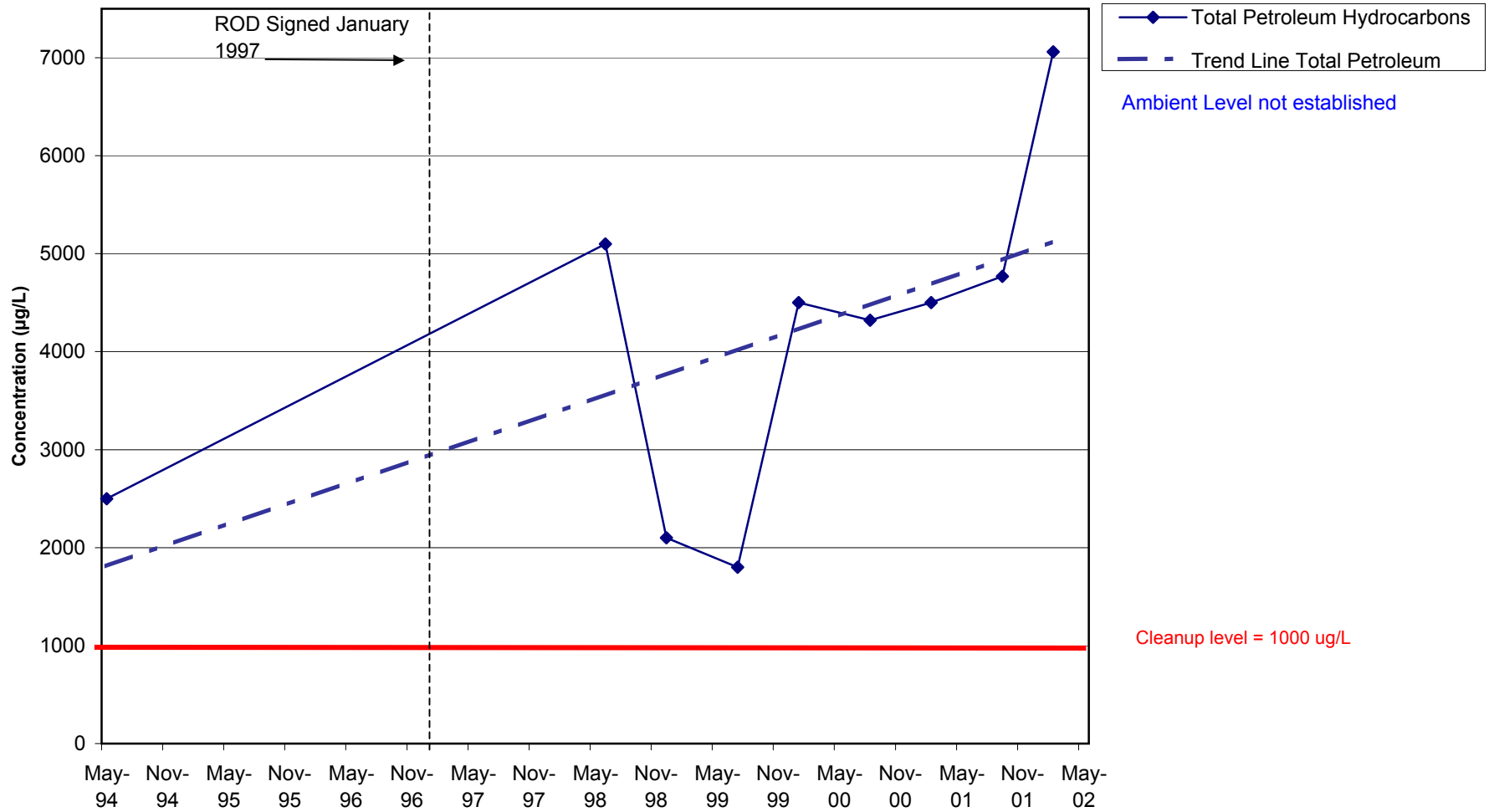
Nickel in Groundwater - Location MW204 (OU A)



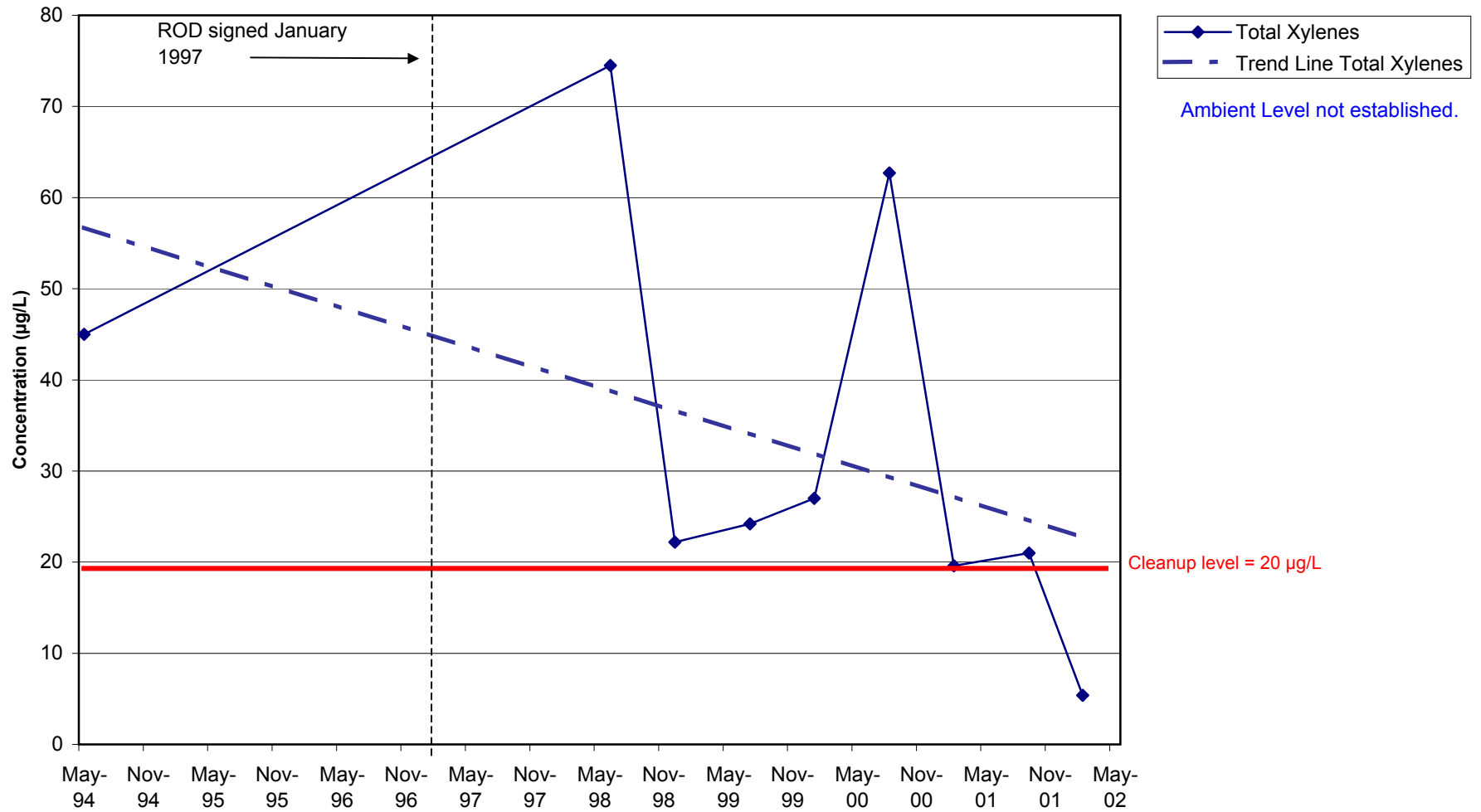
Toluene in Groundwater-Location MW208 (OU A)



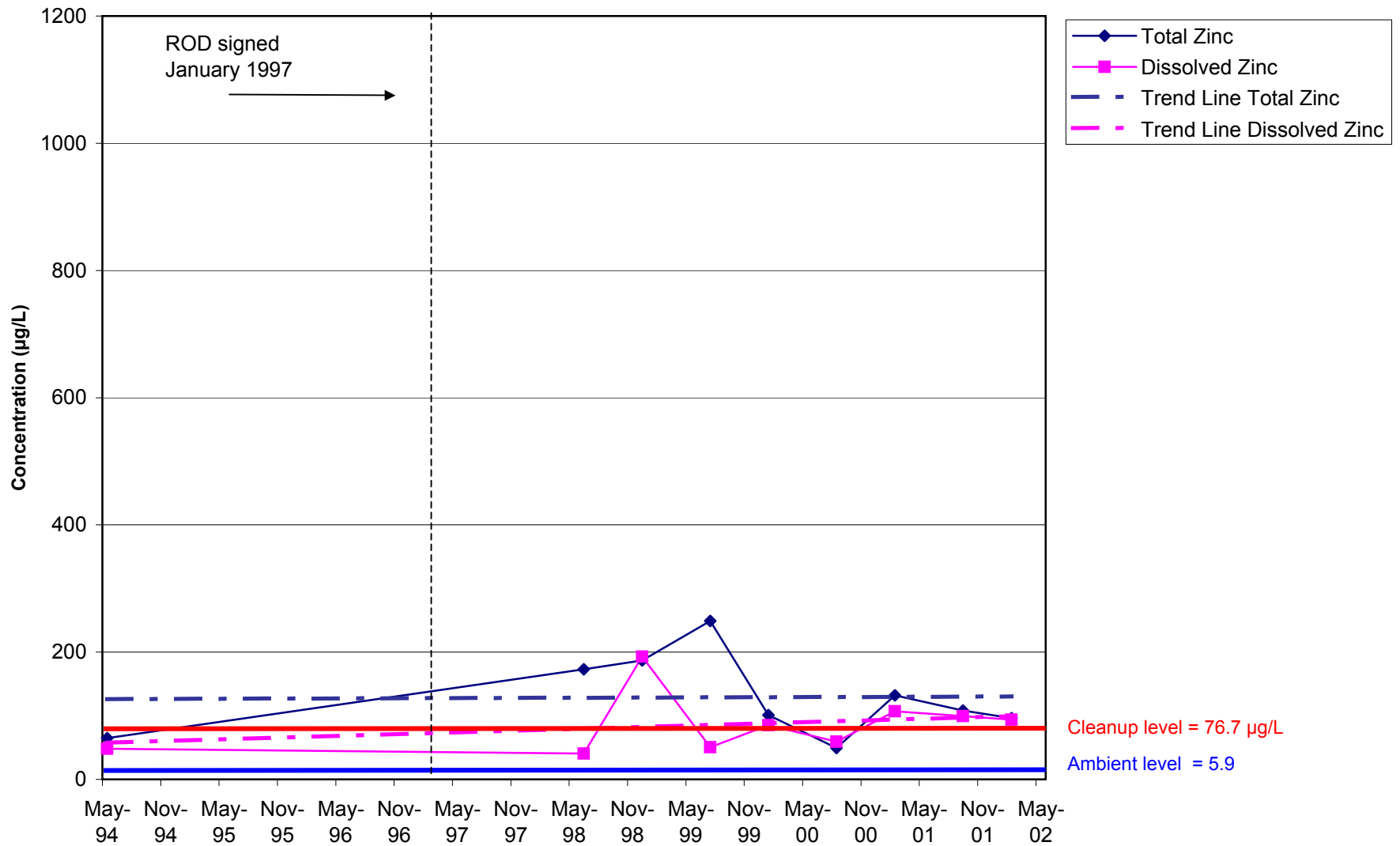
Total Petroleum Hydrocarbons in Groundwater-Location MW208 (OU A)



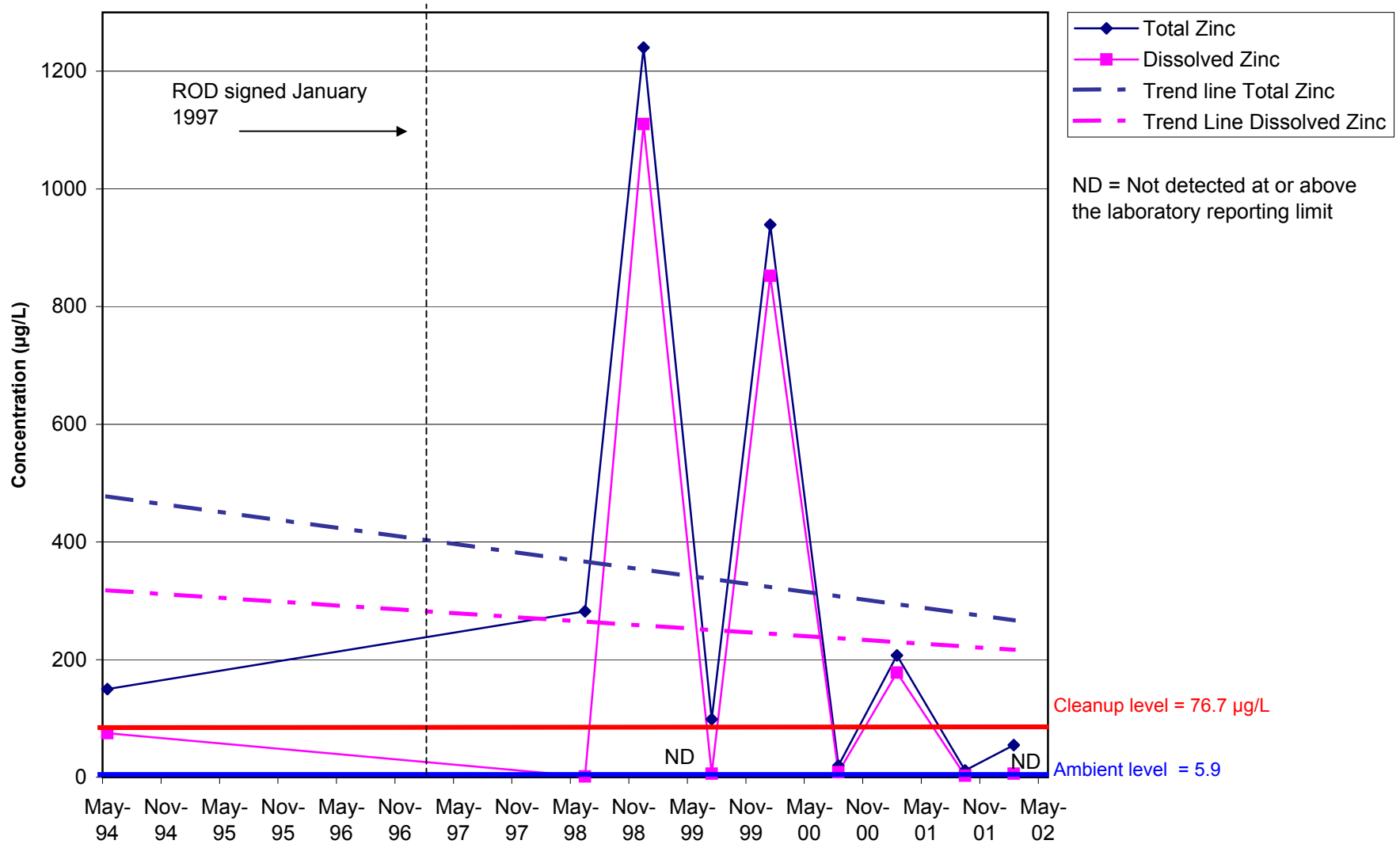
Total Xylenes in Groundwater-Location MW208 (OU A)



Zinc in Groundwater - Location MW204 (OU A)



Zinc in Groundwater - Location MW241 (OU A)



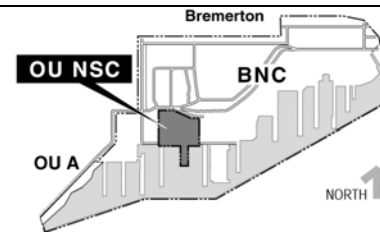
APPENDIX C

Site Inspection Forms

Five-Year Review Site Inspection: OU NSC

Inspection Year: 5-Year Review, 2002

Inspected by: Tom Hughes EFA NW, Jim Tennyson EFA NW, Dwight Leisle PSNS, and Ted Etheridge URS Group on April 30, 2002



PHYSICAL INSPECTION ELEMENTS

1. Pavement Inspection

Date: 4/30/02

Have previously unpaved areas been paved? *Paving condition of the western and central portions of the site has been substantially improved from the mid-1990s as result of paving and sealing activities during the remedial action and the change in site use due to the relocation of the DRMO recycling facility and subsequent conversion to parking.*

Yes No

☒ ☐

Have repairs to existing pavement been made? *Sealing observed during site walk.*

Yes No

☒ ☐

Does the pavement appear to have been maintained following initial repair? *Annual inspections are conducted and repairs follow, though repairs do not appear to always occur within one year of inspection.*

Yes No

☒ ☐

Are there indications of ponding water (poor drainage), cracks in the pavement, or other grading and pavement deficiencies? *Some minor deficiencies noted. These were the same deficiencies noted during the 2001 annual inspection. This is the basis for the conclusion that repairs are not necessarily completed within one year of inspections.*

Yes No

☒ ☐

2. Stormwater System Inspection

Date: 4/30/02

Has the stormwater system been cleaned and repaired in accordance with the ROD? *CCTV inspections and cleaning throughout the OU NSC were conducted during the remedial action in 1997/98. Accumulated sediments were removed from selective catch basins in March 2001 based upon the September 2000 catch basin survey. Utility work related to the construction of Pier D in the SW corner of FISC has disrupted several stormlines. These disrupted lines will be reconstructed and/or cleaned as part of the Pier D construction project.*

Yes No

☒ ☐

Does the stormwater system appear to have been maintained following the initial cleaning and repair? *See notes about Pier D construction above and below. A comprehensive inspection of the stormwater system has been conducted for use in a pending stormwater management plan.*

Yes No

☒ ☐

Are there indications of significant sediment buildup, stormwater backups (such as ponding near catch basins), or other indicators of damage to the system? *The FISC catch basins appeared to be in good shape based on visual inspection. Significant build-up of sediment was noted in two intact catch basins within the Pier D construction site. No damage to the system or sediment buildup was noted outside the Pier D construction site.*

Yes No

☒ ☐

3. Fencing Inspection

Date: 4/30/02

Is site access still controlled by intact fencing? *Security fences are inspected as part of the normal duties of BNC security personnel.*

Yes No

☒ ☐

Five-Year Review Site Inspection: OU NSC

Inspection Year 5-Year Review, 2002

PHYSICAL INSPECTION ELEMENTS, continued			
4. Sign(s) Inspection Date: 4/30/02	Are security signs that help control access still in place and in good condition? FISC is located within a fenced, access controlled federal property. Signs around the FISC security fence are placed for general security purposes. Signs are inspected as part of the daily duties of BNC security personnel.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
5. Monitoring Well Inspection Date: 4/30/02	Does the monitoring wells used for long-term monitoring appear to be in good condition? All long-term monitoring wells were located. MW 392 is within the Pier D construction site and was not visible during the site walk. MW 392 was located by construction crew following site visit. MW 392 will be protected during construction and if damaged will be repaired or reconstructed.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
RECORDS REVIEW - STATUS OF INSTITUTIONAL CONTROLS AND LONG TERM MANAGEMENT			
6. Stormdrain Maintenance Plan	Is Plan finalized and implemented? If no, estimate scheduled completion date. Mechanisms to implement are works in progress. Schedule: Intent to incorporate plan into BNC-wide LUCP following signing of OU B terrestrial ROD Responsible Individual(s): Tom Hughes	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	Is the following documentation available for the stormdrain system? Drawings of the existing system Drawings available in Catch Basin Survey Report (2000) and addendum (2002) Comprehensive maintenance records Not found	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>
7. Excavation Management Plan	Is Plan finalized and implemented? If no, estimate scheduled complete date. Mechanisms to implement are works in progress. Schedule: Intent to incorporate plan into BNC-wide LUCP following signing of OU B terrestrial ROD Responsible Individual(s): Tom Hughes	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
8. Petroleum Management Plan Status of Plan	Is Plan finalized and implemented? If no, estimate scheduled complete date. Final plan dated March 2002 Schedule: Completed Responsible Individual(s): N/A	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
9. Groundwater Restrictions	Have administrative procedures been developed to prohibit the use of groundwater from this site? If no, provide schedule and responsible individual for development of such procedures. Will be included in LUCP following signing of OU B ROD. Schedule: Not established Responsible Individual(s): Dwight Leisle	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
10. Land Use Restrictions	Has any portion of FISC been transferred to a non-federal entity since the last inspection? If yes, have restrictive covenants and deed restrictions been developed? No land transfers within OU NSC Responsible Individual(s): EFA NW If No, provide schedule and responsible individual for developing covenants and deed restrictions. As needed, EFA NW performs suitability for transfer reviews. Schedule: No planned transfers Responsible Individual(s): Michael D. Brady	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
11. Access Restrictions	Do security logs indicate any breaches of security resulting in unauthorized access to OU NSC that could have resulted in exposure to contaminants present at the site? If yes, describe incident(s): Police trespass reports documents less than 6 trespass incidents per year since 1999. Incident descriptions indicate contaminant exposure highly unlikely.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Five-Year Review Site Inspection: OU NSC

Inspection Year 5-Year Review, 2002

RECORDS REVIEW - STATUS OF INSTITUTIONAL CONTROLS AND LONG TERM MANAGEMENT, cont.

12. Monitoring Activities

Has a plan for monitoring of groundwater and institutional controls been finalized and implemented? Has the monitoring plan, including reporting requirements, been adhered to?

Yes

☒

No

☐

If yes, list dates of reports. *Sampling and/or inspections in 1998, 1999, 2000, 2001, 2002*

Do COC concentrations in groundwater remain above remedial goals? *See discussion and graphs in 5-year review report.*

Yes

☒

No

☐

Do statistical trends of these chemicals indicate that monitoring should be:

Yes

☐

No

☐

Continued

Reduced

☒☐

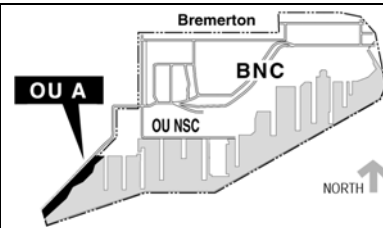
Eliminated

☐☐

Five-Year Review Site Inspection: OU A

Inspection Year: 5-Year Review, 2002

Inspected by: Tom Hughes EFA NW, Jim Tennyson EFA NW, Dwight Leisle PSNS, and Ted Etheridge URS Group



PHYSICAL INSPECTION ELEMENTS

1. Pavement Inspection

Date: 4/30/02

Have previously unpaved areas been paved? *Significant upgrade of site paving compared to conditions present during the RI, particularly at the former helicopter pad parking lot. Contaminated fill is no longer present on the ground surface.*

Yes No

☒ ☐

Have repairs to existing pavement been made? *The limited paving which was present at former helicopter pad parking lot has been substantially upgraded.*

Yes No

☒ ☐

Does the pavement appear to have been maintained following initial repair? *Annual inspections are conducted and repairs follow, though repairs do not appear to always occur within one year of inspection.*

Yes No

☒ ☐

Are there indications of ponding water (poor drainage), cracks in the pavement, or other grading and pavement deficiencies? *Some gouged pavement scheduled for repair, though damage not fully penetrating. Some small areas of cracking or separation of asphalt from Ecology block curbs.*

Yes No

☒ ☐

2. Riprap and Habitat Enhancement Inspection

Date: 4/30/02

Has the riprap been upgraded in accordance with the ROD? *The riprap for the parking lot at the former helicopter pad has been upgraded. Debris which was formerly present along the riprap has been removed. Exposed fill is no longer visible. No seeps were visible during the visit. The intertidal area between the Charleston Beach and the former helicopter pad parking lots appears to have been upgraded during the OU B Marine sediment work near OU A.*

Yes No

☒ ☐

Has the nearshore habitat been enhanced? *Bird boxes are present and in use. Top of riprap is now vegetated and has a freshwater supply and hoses for watering. Only small area of soft-bank habitat visible from waterline.*

Yes No

☒ ☐

Does the riprap and the nearshore habitat appear to be in good condition? *Repairs may be needed in limited areas at the top of the riprap where small voids were observed behind the vegetative strip. These areas appear to have been stabilized since the previous inspection. Nearshore habitat in good condition.*

Yes No

☒ ☐

Does the stormdrain outfall pipe installed by the City appear to have caused erosion of the installed shoreline protection and enhancement features? *No erosion visible from shoreline riprap. Outfall pipe not visible from shoreline.*

Yes No

☒ ☐

3. Fencing Inspection

Date: 4/30/02

Is site access still controlled by intact fencing? *Access is limited to certain openings in fencing. Public is allowed access, but activities are monitored by roving security patrols.*

Yes No

☒ ☐

4. Sign(s) Inspection

Date: 4/30/02

Are security signs that help control access still in place and in good condition? *Signs present and readable on fencing - signs indicate government property.*

Yes No

☒ ☐

5. Monitoring Well Inspection

Date: 4/30/02

Do the monitoring wells used for long-term monitoring appear in good condition? *Long-term monitoring wells are in use. No visible damage to the monuments were observed during the site walk.*

Yes No

☒ ☐

Five-Year Review Site Inspection: OU A

Inspection Year: 5-Year Review, 2002

RECORDS REVIEW - STATUS OF INSTITUTIONAL CONTROLS AND LONG TERM MANAGEMENT			
6. Excavation Management Plan	<p>Is Plan finalized and implemented? If no, estimate scheduled complete date. <i>Mechanisms to implement are works in progress.</i></p> <p>Schedule: <i>Intent to incorporate plan into BNC-wide LUCP following signing of OU B terrestrial ROD</i></p> <p>Responsible Individual(s): <i>Tom Hughes</i></p>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	
7. Petroleum Management Plan Status of Plan	<p>Is Plan finalized and implemented? If no, estimate scheduled complete date. <i>Final plan dated March 2002</i></p> <p>Schedule: <i>Completed</i></p> <p>Responsible Individual(s): <i>N/A</i></p>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p>	
8. Fish and Shellfish restrictions	<p>Are restrictions in place near OU A? If yes, what documentation of the restrictions is available? <i>Existing base security procedures result in enforcement of no-fishing and no shellfish harvesting restrictions within BNC boundaries.</i></p>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p>	
9. Groundwater Restrictions	<p>Have administrative procedures been developed to prohibit the use of groundwater from this site? If no, provide schedule and responsible individual for development of such procedures.</p> <p><i>Will be included in LUCP following signing of OU B ROD.</i></p> <p>Schedule: <i>Not established</i></p> <p>Responsible Individual(s): <i>Dwight Leisle</i></p>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	
10. Land Use Restrictions	<p>Has any portion of OU A been transferred to a non-federal entity since the last inspection? If yes, have restrictive covenants and deed restrictions been developed? <i>No transfers of OU A property</i></p> <p>Responsible Individual(s): <i>EFA NW</i></p> <p>If No, provide schedule and responsible individual for developing covenants and deed restrictions. <i>As needed, EFA NW performs suitability for transfer reviews.</i></p> <p>Schedule: <i>No planned transfers.</i></p> <p>Responsible Individual(s): <i>Michael D. Brady</i></p>	<p>Yes <input type="checkbox"/></p> <p>No <input checked="" type="checkbox"/></p>	
11. Access Restrictions	<p>Are procedures in place to minimize access to OU A by the general public? Please describe the procedures used to control access to this area: <i>Roving security patrols monitor public's activities and prevent unauthorized activities. Fencing with limited ingress and egress points serves to control access.</i></p>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p>	
12. Monitoring Activities	<p>Has a plan for monitoring of groundwater and institutional controls been finalized and implemented? Has the monitoring plan, including reporting requirements, been adhered to?</p> <p>If yes, list dates of reports. <i>Sampling and/or inspections in 1998, 1999, 2000, 2001, 2002</i></p>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p>	
	<p>Do COC concentrations in groundwater remain above remedial goals? <i>See discussion and graphs in 5-year review report.</i></p>	<p>Yes <input checked="" type="checkbox"/></p> <p>No <input type="checkbox"/></p>	
	<p>Do statistical trends of these chemicals indicate that monitoring should be:</p> <p>Continued <input type="checkbox"/></p> <p>Reduced <input checked="" type="checkbox"/></p> <p>Eliminated <input type="checkbox"/></p>	<p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p>	

APPENDIX D

Interview Responses

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 4 Interview – Community Member

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Lisa A. Moss
Title: Community Co-Chair
Organization: NSB RAB
Telephone: 360-475-6928
E-mail: moss1@ctcgsc.org
**Address: Concurrent Technologies Corporation, 510 Washington Ave.,
Bremerton, Washington 98310**

Contact made by: Michael Meyer

Response type: ?

Date: 5/2/02

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: I very familiar with the BNC and am aware of the RODs, remedies, and monitoring and maintenance activities to a limited degree.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: Appropriate actions appear to be taking place.

3. Do you feel well informed about the remediation activities and progress at the Bremerton Naval Complex? Please elaborate.

Response: I would like to be more aware. While activities are discussed well during RAB meetings, I do not have ready access to most project documents or the events related to decision-making, i.e., most information is presented at the RAB meetings as completed, but limited in-process activities are discussed at the infrequently held meetings.

4. What effects have post-ROD remedy implementation had on the surrounding community?

Response: I think most people in the community are unaware of post-ROD remedy implementation activities.

5. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: No.

6. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: Following completion of the CAD, testing results showed higher levels of pollutants still in surface layers of Sinclair Inlet sediments. I would like to know more about the Navy's activities and expected actions related to these findings.

7. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: No additional individuals. Not aware enough of applicable documents to know of others that should be reviewed.

8. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: I believe the Navy is taking appropriate actions to address past contamination – I'm more worried about current discharges and their potential to re-contaminate the marine environment.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 2 Interview – Regulatory Agency

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Nancy Harney

Title: Remedial Project Manager

Organization: EPA

Telephone: (206) 553-6635

E-mail: harney.nancy@epa.gov

Address: USEPA Region 10

1200 Sixth Ave.

Seattle, WA 98101

Contact made by:

Response type:

Date:

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: The Department of Ecology has had the lead regulatory oversight role at these two operable units. In accordance with an EPA/Ecology worksharing agreement, EPA has not participated in the implementation of the remedies at these OUs, nor does EPA have an oversight role in the monitoring or maintenance associated with these remedies.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: See response to Question 1. EPA has not had a role in remedy implementation, nonetheless, we are not aware of any problems.

3. Do you feel well informed about the remediation activities and progress at the Bremerton Naval Complex? Please elaborate.

Response: Yes. EPA has had a good working relationship with the Navy at this site.

4. To your knowledge, since the ROD was signed have there been any new scientific findings that relate to projecting potential site risks which might call into question the protectiveness of the remedy?

Response: I am not aware of anything, however, again, due to EPA's limited role at OU NSC and OU A, EPA is not in a position to answer this question.

5. Do you believe that the pavement improvements made within OU NSC and OU A effectively met the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Similarly, do you believe that the storm drain cleaning at OU NSC effectively met the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Do you believe that the riprap and habitat enhancements at OU A effectively met the ROD goals of “reduc[ing] the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of these improvements.

Response: See response to Question 1.

6. Are you satisfied with the progress made following signing of the RODs toward implementation of an Excavation Management Plan, a Petroleum Management Plan, and an Stormdrain Maintenance Plan for Bremerton Naval Complex (BNC)? Please describe the reasons for your degree of satisfaction.

Response: Not applicable. EPA has not been involved.

7. Following signing of the RODs for OU NSC and OU A, have there been any complaints, violations, or other incidents related to BNC installation restoration issues that required a response by your office? If so, please provide details of the events and results of the responses.

Response: No.

8. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs?

Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: I do not have personal knowledge and therefore cannot address this question. See response to Question 1.

9. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: No.

10. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: None

11. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: The Marine OUB ROD should be included on the list of documents to be reviewed.

12. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: EPA has been actively involved in the RI/FS for OU B (we have a joint lead regulatory oversight role with Ecology at this OU), and there are several points that EPA would like to make regarding the status of OU B. The Navy needs to discuss these issues in the Five Year Review Report.

- 1. At this point in time, EPA does not consider the marine remedy to be complete. Contamination likely associated with the filling of the Pit CAD has been identified on DNR land adjacent to the Pit CAD site and the Navy has not yet addressed this contamination. One of the recommendations in the Five Year Review must be a requirement to complete remedial activities on DNR land along with further characterization and cleanup of sediments that may have been impacted by Pit CAD activities. EPA believes there are on-going**

exposures related to exceedances of the cleanup levels in the Pit CAD environs. In addition, the ROD called for development and implementation of a marine long-term monitoring plan and this plan while in the early development phase, has not yet been completed and approved by EPA and Ecology.

- 2. There is a potential problem with Site 1. This issue was brought to my attention last summer, and unfortunately, given other priorities, it slipped through cracks and I did not bring it the Navy's attention earlier. However, the Five Year Review is a good opportunity to raise it. During a boat tour that was conducted for various agency personnel in the Summer of 2001, a representative from EPA noticed that the fish mix that was required to be placed at Site 1 looked like it had washed away. It appeared that the fish mix was not where it should have been and it was unclear what had happened. We need to determine what happened (Was there a design problem? Was there an implementation problem?) One of the recommendations in the Five Year Review should be the need to evaluate the status of the fish mix at Site 1 and then determine if further action is needed.**
- 3. Overall, the remedy selection process for the terrestrial portion of OU B is progressing towards a ROD and EPA's comments are being addressed in the RI and FS. While EPA recognizes that there is a national dispute currently pending regarding institutional controls, the Five Year Review should nonetheless address the status of implementation of institutional controls at the Shipyard, both on an OU-specific as well as on a facility-wide basis .**

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 2 Interview – Regulatory Agency

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Kathryn Carlin (Bragdon-Cook)
Title: Acting Unit Supervisor
Organization: Sediment Management Unit
Toxics Cleanup Program
Washington Dept. of Ecology
Telephone: (360) 407-7242
E-mail: kbco461@ecy.wa.gov
Address: P. O. Box 47600
Olympia, WA 98504-7600

Contact made by: email
Response type: email
Date: May 13, 2002

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: None. I am not familiar with the upland site. I became sediment site manager for the marine operable unit, OUB, in June 2001 and have only been involved in the sediment remediation efforts.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: None.

3. Do you feel well informed about the remediation activities and progress at the Bremerton Naval Complex? Please elaborate.

Response: None.

4. To your knowledge, since the ROD was signed have there been any new scientific findings that relate to projecting potential site risks which might call into question the protectiveness of the remedy?

Response: None.

5. Do you believe that the pavement improvements made within OU NSC and OU A effectively met the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Similarly, do you believe that the storm drain cleaning at OU NSC effectively met the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Do you believe that the riprap and habitat enhancements at OU A effectively met the ROD goals of “reduc[ing] the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of these improvements.

Response: None.

6. Are you satisfied with the progress made following signing of the RODs toward implementation of an Excavation Management Plan, a Petroleum Management Plan, and an Stormdrain Maintenance Plan for Bremerton Naval Complex (BNC)? Please describe the reasons for your degree of satisfaction.

Response: None.

7. Following signing of the RODs for OU NSC and OU A, have there been any complaints, violations, or other incidents related to BNC installation restoration issues that required a response by your office? If so, please provide details of the events and results of the responses.

Response: None.

8. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: None.

9. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: None.

10. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: None.

11. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: Marian Abbett, Ecology's former sediment site manager (OUB), (360) 407-6257.

12. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: The ROD for the OUB marine environment was signed in June 2000 describing the selected remedy and contaminated sediments were dredged and disposed of in a confined aquatic disposal (CAD) pit excavated on submerged Navy property. Although water column monitoring and sub-bottom profiling indicated successful placement of the contaminated material without significant disruption to the site, post construction sediment monitoring showed elevated levels of contamination around the pit perimeter.

In response, clean material was placed around the perimeter to dilute elevated PCB and mercury concentrations. Surficial sediment chemistry concentrations are lower than that from deeper samples and indicate natural recovery processes will aid in further concentration dilution. I support the selected remedy and expect the collection of further data through long term monitoring to answer questions regarding whether and, if so, how CAD pit construction caused local recontamination.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 2 Interview – Regulatory Agency

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Chung Ki Yee
Title: Environmental Engineer 3
Organization: Washington State Department of Ecology
Telephone: 360-407-6991
E-mail: cyee461@ecy.wa.gov
Address: P.O. Box 47600, Olympia, WA 98504-7600

Contact made by:

Response type:

Date:

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: Since July 2001, I have been serving as the Ecology lead for OU NSC and OU A at the Bremerton Naval Complex. I have reviewed the Records of Decision and semi-annual ground water monitoring reports for these two operable units. More recently I have completed review of the OU NSC Catch Basin Survey Report and the Addendum to Catch Basin Survey Report. To the extent limited by the information available in these reports, I am familiar with the completed remedial actions and the ground water monitoring results for these two operable units. In the absence of the Stormdrain Management Plan, a Navy's work-in-progress, I am not familiar with any maintenance activities and/or plans at these two operable units pertaining to storm drains.

With respect to Operable Unit B at the Bremerton Naval Complex, I have reviewed the Final OU B Marine Record of Decision, reviewed and commented on the draft Remedial Investigation and Feasibility Study, the draft Proposed Plan and the Petroleum Management Plan. I am familiar with the results of investigations conducted at OU B and the bases for selecting the proposed selected remedy.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: Based on information obtained from meetings and on reports submitted to Ecology from the Navy, I understand that the Navy has completed the erosion protection project at OU A and the catch basin survey, cleanup, and repair project at OU NSC in accordance with the Records of Decision.

3. Do you feel well informed about the remediation activities and progress at the Bremerton Naval Complex? Please elaborate.

Response: I have completed review of the Catch Basin Survey Report, Operable Unit Naval Supply Center, October 2000 and the Addendum to Catch Basin Survey Report, Operable Unit Naval Supply Center, January 2002. Based on my review of these two reports along with my understanding of the OU NSC Record of Decision, I feel that I am adequately informed on the catch basin survey, cleanup, and repair actions completed at OU NSC.

On February 6th, 2002, I attended a Restoration Advisory Board meeting on the Bremerton Naval Complex. At the RAB meeting, the Navy and contractors presented project summaries on the erosion protection project at OU A and the offshore sediment dredging, disposal, and capping project at OU B. I have also attended meetings with the Navy and with Ecology staff to discuss project status and other related issues for these two operable units. Based on information obtained from these meetings and from my review of the OU A ROD and the OU B Marine ROD, I feel that I am adequately informed on these two remediation projects.

4. To your knowledge, since the ROD was signed have there been any new scientific findings that relate to projecting potential site risks which might call into question the protectiveness of the remedy?

Response: I do not believe there have been any new scientific findings which might impact the selected remedies at the Bremerton Naval Complex.

However, the Model Toxics Control Act Amended February 12, 2001 requires the monitoring of soil vapor at OU NSC and OU B due to high detected concentrations of diesel-range petroleum hydrocarbons in the soil. Soil vapor monitoring is required to evaluate the potential health risk via the soil to air pathway. The Navy has planned to assess this risk pathway in the recently completed Petroleum Management Plan.

Based on the hydrophobic nature of PCBs, in 2001 Ecology has put forth to the Navy Ecology's concern that PCBs at the site might be transported to the Sinclair Inlet via floating petroleum hydrocarbons. I understand that this issue will be addressed in the post record of decision long-term monitoring program.

5. Do you believe that the pavement improvements made within OU NSC and OU A effectively met the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Similarly, do you believe that the storm drain cleaning at OU NSC effectively met the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Do you believe that the riprap and habitat enhancements at OU A effectively met the ROD goals of “reduc[ing] the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of these improvements.

Response: On the basis these remedial actions were made in conformance with the selected remedies in the records of decision, therefore I believe these remedial actions have been designed to meet the goals as stated in the records of decision.

Review of the OU A semi-annual ground water monitoring reports shows with the exception of total petroleum hydrocarbons in monitoring well MW208, all other contaminant concentrations generally show leveling or declining trends.

Review of the OU NSC semi-annual ground water monitoring reports shows three of the five wells sampled detected increasing levels of contamination after the signing of the record of decision. Specifically, these wells and the contaminants are arsenic in monitoring wells MW310 and MW386 and total petroleum hydrocarbons in monitoring well MW392. Other contaminant concentrations generally show leveling or declining trends.

The leveling or declining trends detected for some contaminants in OU A and OU NSC may be attributable to pavement improvement projects. However, the increasing concentrations of total petroleum hydrocarbons detected in some ground water samples may be an indication that pavement improvement alone may not be able to achieve the stated objective of reducing the potential of contaminants to reach the groundwater.

6. Are you satisfied with the progress made following signing of the RODs toward implementation of an Excavation Management Plan, a Petroleum Management Plan, and an Stormdrain Maintenance Plan for Bremerton Naval Complex (BNC)? Please describe the reasons for your degree of satisfaction.

Response: Ecology just received the Final Petroleum Management Plan and I am satisfied with the plan. This plan has addressed most of Ecology concerns and in particular the soil vapor monitoring requirement per the Model Toxics Control Act Amended February 12, 2001.

I understand that the Navy is working on the Excavation Management Plan and the Stormdrain Maintenance Plan. To the extent that these plans are still work-in-progress, I am not satisfied with the progress.

7. Following signing of the RODs for OU NSC and OU A, have there been any complaints, violations, or other incidents related to BNC installation restoration issues that required a response by your office? If so, please provide details of the events and results of the responses.

Response: Since my assignment as an Ecology lead to OU NSC and OU A in July 2001, I have not received any complaints, violations, or other incidents related to BNC installation restoration issues that required a response by me.

8. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: Based on my review of the Records of Decision and the semi-annual ground water monitoring reports for OU NSC and OU A, the on-going environmental monitoring programs in my judgment are sufficient to meet the goals of the Records of Decisions.

9. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: No, I am not aware of any community concerns regarding implementation of the remedies at OU NSC and OU A.

10. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: Given the increasing trends of total petroleum hydrocarbons detected in ground water samples from OU NSC and OU A, I believe that pavement improvement alone may not be able to achieve the stated goal of reducing the potential for contaminants to reach the ground water. In the event that total petroleum hydrocarbons or other contaminants continue to increase in the future, the Navy should evaluate other remedial alternatives.

As stated in Question No. 4, Ecology is concerned with the potential role free petroleum products may play in transporting PCBs to the Sinclair Inlet. To assess this potential problem, Ecology foresees the Navy will collect and analyze limited free product samples for PCBs during the long-term monitoring phase of the cleanup program.

11. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: The following is a listing of documents that should be considered for the five-year review.

Final Record of Decision, BNC OU B Marine, June 6, 2000
Catch Basin Survey Report, Operable Unit Naval Supply Center, October 2000
Addendum to Catch Basin Survey Report, January 2002.

12. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: The remedy selection process at OU B Marine occurred before my employment with the Ecology Site Cleanup Unit. My impression of the remedy selection process, based on my review of the Record of Decision and from discussions with Mr. Bruce Cochran (ret.), the previous Ecology lead for OU B, is that it was well planned and has addressed concerns from regulatory agencies and from the public.

Ecology thus far is satisfied with the remedy selection process for the terrestrial portion of the OU B.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 3 Interview – Tribal Authority

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Scott Pozarycki

Title: Biologist

Organization: Suquamish Tribe

Telephone: 360-394-5257

E-mail: spozarycki@suquamish.nsn.us

Address: Fisheries Department

PO Box 498

15838 Sandy Hook Road

Suquamish, WA 98392

Contact made by:

Response type:

Date:

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: I am most familiar with the OU A ROD, remedy, and monitoring, but am also generally familiar with OU NSC.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OU A?

Response: Generally pleased with the goal of reducing chemical contamination inputs into Sinclair Inlet. I have not observed the OU NSC paving or other NSC activities. OU A shoreline remedy is effective at preventing contaminated soils from eroding into Sinclair Inlet, but the habitat enhancements implemented at the site are of questionable value. A remedy that substantively improves habitat at the site would have been preferred.

In addition, the OU A shoreline remedy encroached on the existing aquatic environment resulting in a net loss of aquatic habitat. At the time

it was agreed that mitigation for this was required based on the Washington State Hydraulic Code. This mitigation has yet to be implemented.

3. Do you feel well informed about the remediation activities and progress at the Bremerton Naval Complex? Please elaborate.

Response: As far as I know I currently receive all remediation plans and monitoring reports, so yes I feel well informed.

4. What effects have post-ROD remedy implementation had on the tribe and the surrounding community?

Response: Remedy implementation to date has had limited effect on the Tribe. The remedies removed historical chemical contamination and decreased contamination entering Sinclair Inlet, both positive steps. However, health concerns and fish advisories still exist for consumption of many species from Sinclair Inlet. Tribal resources are thus still negatively impacted. The cleanup will hopefully reverse this situation in the near future.

The OU B marine remedy implementation did have some effect on the annual chinook salmon fishery in Sinclair Inlet, but this was relatively minor. The Tribe appreciates the Navy's efforts to work around the Tribal fishery during the time this remedy was implemented.

5. Are you aware of any tribal or other community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: The Tribe was generally disappointed with the remedy for OU A. While the importance of restoring habitat was mentioned in the ROD, the remedy did not really improve habitat in the area. A riprap shoreline cannot be considered an improvement in habitat. The habitat enhancements, namely placing pea gravel over the riprap, were of little value.

6. Do you believe that the pavement improvements made within OU NSC and OU A effectively met the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Similarly, do you believe that the storm drain cleaning at OU NSC effectively met the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Do you believe that the riprap and habitat enhancements at OU A effectively met the ROD goals of “reduc[ing] the physical hazards associated with the existing

riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of these improvements.

Response: The remedy addressed all ROD goals except for habitat enhancement. Chemical contamination was addressed at the site, but habitat was not improved.

7. Are you satisfied with the progress made following signing of the RODs toward implementation of an Excavation Management Plan, a Petroleum Management Plan, and an Stormdrain Maintenance Plan for the Bremerton Naval Complex (BNC)? Please describe the reasons for your degree of satisfaction.

Response: I am aware only of the Petroleum Management Plan.

8. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: The monitoring plans are sufficient to meet goals of the RODs.

9. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: Positive steps have been made to address chemical contamination released from the BNC. The Tribe applauds the Navy for their efforts to clean up this historical contamination. Hopefully, chemical contamination will be reduced to levels that would permit harvesting of natural resources in the near future.

A remaining concern is the nature of chemical contamination in clams in the area. Clam habitat is certainly limited along the north shoreline of Sinclair Inlet, however populations do exist and Tribal members were known to harvest from the northern shoreline as recently as the mid 1980s. Some data evaluating this human health endpoint is needed.

10. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: none

11. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: The Tribe is supportive of the remedy selection process at OU B terrestrial to date. The Tribe is particularly encouraged by the Navy's willingness to pursue a shoreline remedy that substantially improves local habitat in addition to controlling erosion of contaminated fill material. Together, we should be able to develop a remedy that works for all parties.

The Tribe is generally satisfied with the marine cleanup. However, the pit-CAD monitoring indicated that a relatively large portion of the Navy's marine property was not investigated for chemical contamination. Subsequent monitoring of the pit-CAD suggests that these unsampled areas may contain chemical concentrations above state standards and above ROD cleanup goals. This issue needs to be addressed with a sampling and analysis plan.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 1 Interview – Navy Personnel

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: M. Diane Manning

Title: Deputy Public Affairs Officer

Organization: Puget Sound Naval Shipyard

Telephone: 360-476-7111

E-mail: manningmd@psns.navy.mil

Address:

PSNS (Code 1160)

1400 Farragut Avenue

Contact made by: ?

Response type:

Date:

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: Small degree of familiarity

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: Knowledge is based on others input rather than first-hand - seems satisfactory.

3. To the best of your knowledge, did the pavement improvements made within OU NSC and OU A effectively meet the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Has on-going pavement maintenance been timely and effective? Please indicate the basis for your assessment of the paving improvements.

Response: None.

4. To the best of your knowledge, did the storm drain cleaning and repairs at OU NSC effectively meet the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Has on-going storm drain maintenance been timely and effective? Please indicate the basis for your assessment of the storm drain cleaning and repairs.

Response: None.

5. To the best of your knowledge, did the riprap and nearshore habitat enhancements at OU A effectively meet the ROD goals of “reduc[ing] the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of the riprap and nearshore habitat enhancements.

Response: None.

6. To the best of your knowledge, what is the status of the Excavation Management Plan, the Petroleum Management Plan, and the Stormdrain Maintenance Plan for the Bremerton Naval Complex?

Response: None.

7. Following signing of the Record of Decision (ROD) for OU NSC and OU A in 1996, are you aware of any land use or ownership changes that you believe may impact the effectiveness of any component of the selected remedies for these two OUs?

Response: No. Property is still Navy-owned to the best of my knowledge.

8. Please describe any notifications that you are aware of that were given to Navy personnel following signing of the RODs in 1996 stating that the use of groundwater from beneath OU NSC and OU A is restricted. Are you aware of any use of groundwater from beneath these two OUs?

Response: None.

9. Please describe any excavation activity of which you are aware that has breached the asphalt cap at either OU NSC or OU A since signing of the RODs in 1996. To the best of your knowledge, was a plan developed prior to excavation to address health and safety precautions and soil handling and disposal?

Response: None.

10. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: None.

11. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: I'm not aware of any long-term or ongoing community concerns.

12. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: None.

13. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: I think you need to add Clark Pitchford at Naval Station Bremerton & perhaps others at NSB.

14. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: The selection process has been open to community members and any interested party. All are given opportunity to provide comment if interested. Indications are that this process works well.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 1 Interview – Navy Personnel

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Daniel Read

Title: Engineering Project Lead

Organization: Naval Station Bremerton, Public Works Engineering

Telephone: (360)476-8148

E-mail: readd@psns.navy.mil

Address: 120 S. Dewey Street

Bremerton, WA 98314

Contact made by: Michael Meyer

Response type: Email

Date: 24 April 2002

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: Seventeen years engineering experience in Public Works at the Bremerton naval complex. No direct experience with OU A or OU NSC.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: None

3. To the best of your knowledge, did the pavement improvements made within OU NSC and OU A effectively meet the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Has on-going pavement maintenance been timely and effective? Please indicate the basis for your assessment of the paving improvements.

Response: None

4. To the best of your knowledge, did the storm drain cleaning and repairs at OU NSC effectively meet the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Has on-going storm drain maintenance been timely and effective? Please indicate the basis for your assessment of the storm drain cleaning and repairs.

Response: None

5. To the best of your knowledge, did the riprap and nearshore habitat enhancements at OU A effectively meet the ROD goals of “reduc[ing]the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of the riprap and nearshore habitat enhancements.

Response: None

6. To the best of your knowledge, what is the status of the Excavation Management Plan, the Petroleum Management Plan, and the Stormdrain Maintenance Plan for the Bremerton Naval Complex?

Response: EMP – Instruction preparation is in progress, close to signature.

PMP – None

SMP – CTC is updating storm drain maps, preparing needs assessment, and preparing recommendation for PMI.

7. Following signing of the Record of Decision (ROD) for OU NSC and OU A in 1996, are you aware of any land use or ownership changes that you believe may impact the effectiveness of any component of the selected remedies for these two OUs?

Response: None

8. Please describe any notifications that you are aware of that were given to Navy personnel following signing of the RODs in 1996 stating that the use of groundwater from beneath OU NSC and OU A is restricted. Are you aware of any use of groundwater from beneath these two OUs?

Response:None

9. Please describe any excavation activity of which you are aware that has breached the asphalt cap at either OU NSC or OU A since signing of the RODs in 1996. To the best of your knowledge, was a plan developed prior to

excavation to address health and safety precautions and soil handling and disposal?

Response: Pier D construction

10. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: None

11. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: None

12. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: None

13. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

**Response: Tommy Horton, Civil Engineer
Naval Station Bremerton
Public Works Engineering
(360)476-2723**

14. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: None

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 1 Interview – Navy Personnel

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Tommy A Horton

Title: Civil Engineer

Organization: Bremerton Zone, Public Works

Telephone: 360 476 2723

E-mail: hortont@psns.navy.mil

Address: C/N444.92, Bldg 448

120 S Dewey St

Bremerton, WA 98314

Contact made by: By e-mail

Response type: by e-mail

Date: 04/29/02

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: 1. I have been working for the Navy for 30 + years

2. I have worked with Greg Leicht on drainage plans that were for the areas that were being paved.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: We have created 100% runoff area since we now have 100% of the areas paved. There should have been some other methods of choice.

3. To the best of your knowledge, did the pavement improvements made within OU NSC and OU A effectively meet the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Has on-going pavement maintenance been timely and effective? Please indicate the basis for your assessment of the paving improvements.

Response: 1. Within those areas paved there has been no water reaching the ground from the surface. No human can reach these soils since we have 100% of these areas paved.

2. There has been no replacement at this time.

3. Usually all paving repairs would go through our office.

4. To the best of your knowledge, did the storm drain cleaning and repairs at OU NSC effectively meet the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Has on-going storm drain maintenance been timely and effective? Please indicate the basis for your assessment of the storm drain cleaning and repairs.

Response: 1. Our storm lines still drain to Sinclair Inlet.

2. Our repairs/maintenance is done by Shop 07 and I would assume that are in the PMI program.

I know the shop has a PMI program and if the CB are in the system the shop will complete the annual clean out of the CB.

5. To the best of your knowledge, did the riprap and nearshore habitat enhancements at OU A effectively meet the ROD goals of “reduc[ing] the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of the riprap and nearshore habitat enhancements.

Response: 1. The project was very effective in cleaning up the shoreline. The tide will still go into the fill and will still washout materials, both organic and inorganic.

2. I have inspected all the areas.

6. To the best of your knowledge, what is the status of the Excavation Management Plan, the Petroleum Management Plan, and the Stormdrain Maintenance Plan for the Bremerton Naval Complex?

Response: If the plans are in place, they are not being followed in design because the plans and requirements did not reach the working level personnel.

7. Following signing of the Record of Decision (ROD) for OU NSC and OU A in 1996, are you aware of any land use or ownership changes that you believe may impact the effectiveness of any component of the selected remedies for these two OUs?

Response: 1. The ownership of OU NSC has changed from Naval Supply Center to Naval Station Bremerton.

2. No change to selected remedies.

8. Please describe any notifications that you are aware of that were given to Navy personnel following signing of the RODs in 1996 stating that the use of groundwater from beneath OU NSC and OU A is restricted. Are you aware of any use of groundwater from beneath these two OUs?

Response: 1. I am unaware of any notifications given to either naval personnel or civilian personnel on water restriction.

2. No groundwater has ever been used.

9. Please describe any excavation activity of which you are aware that has breached the asphalt cap at either OU NSC or OU A since signing of the RODs in 1996. To the best of your knowledge, was a plan developed prior to excavation to address health and safety precautions and soil handling and disposal?

Response: 1. For OU NSC – Pier D Construction and Utilities runs.

2. No plan was developed that I am aware of unless it was covered in the contractor Environmental Plan. But regarding dirt, no special requirements were ever told to me about handling or disposal of it.

10. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: None

11. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: None that I have heard. But I also believe no one in the community is aware of these programs.

12. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: They are to narrow in the thinking of solutions and no real long term plans, since we still have new building and requirements being given to us.

13. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we

should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: None

14. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: The only remedy is pave everything over. No real thinking is being used in these solutions.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 1 Interview – Navy Personnel

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Dwight Leisle

Title: PSNS IR Program Manager

Organization: PSNS

Telephone: (360) 476-2630

E-mail: leislede@psns.navy.mil

Address: Code 106.32, PSNS, Bremerton WA 98314

Contact made by: Michael Meyer

Response type: Email

Date: 04/26/02

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: Since October 2001, I have been the PSNS IR Program Manager. I have reviewed the RODs for OU A and OU NSC and I am very familiar with the implementation of the remedies.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: I believe the overall IR process at OU A and OU NSC has been very successful. I believe the contractors responsible for the implementation of the remedies at OU A and OU NSC have done an outstanding job.

3. To the best of your knowledge, did the pavement improvements made within OU NSC and OU A effectively meet the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Has on-going pavement maintenance

been timely and effective? Please indicate the basis for your assessment of the paving improvements.

Response: I believe the pavement improvements have met the goals stated in the RODs. My assessment is based upon review of related close out reports and site tours. Pavement maintenance procedures have not been finalized to date. It is my understanding that pavement maintenance procedures will be incorporated into the Land Use Control Inspection and Maintenance Plan to be finalized concurrent with the OU B (Terrestrial) ROD.

4. To the best of your knowledge, did the storm drain cleaning and repairs at OU NSC effectively meet the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Has on-going storm drain maintenance been timely and effective? Please indicate the basis for your assessment of the storm drain cleaning and repairs.

Response: I believe the storm drain cleaning and repairs have met the goals stated in the RODs. My assessment is based upon review of related close out reports and site tours. It is my understanding that storm drain maintenance procedures will be incorporated into the Land Use Control Inspection and Maintenance Plan to be finalized concurrent with the OU B (Terrestrial) ROD.

5. To the best of your knowledge, did the riprap and nearshore habitat enhancements at OU A effectively meet the ROD goals of “reduc[ing]the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of the riprap and nearshore habitat enhancements.

Response: I believe the riprap and nearshore habitat enhancement at OU A have met the goals stated in the ROD. My assessment is based upon review of related close out reports and site tours. It is my understanding that shoreline erosion control maintenance procedures will be incorporated into the Land Use Control Inspection and Maintenance Plan to be finalized concurrent with the OU B (Terrestrial) ROD.

6. To the best of your knowledge, what is the status of the Excavation Management Plan, the Petroleum Management Plan, and the Stormdrain Maintenance Plan for the Bremerton Naval Complex?

Response: The final Petroleum Management Plan was issued in March 2002. The Excavation Management Plan and the Storm drain Maintenance Plan will be incorporated into the Land Use Control

Inspection and Maintenance Plan. A 1999 draft final of this document was placed on hold per request from EPA. It is our intent to finalize this document concurrent with the OU B (Terrestrial) ROD.

7. Following signing of the Record of Decision (ROD) for OU NSC and OU A in 1996, are you aware of any land use or ownership changes that you believe may impact the effectiveness of any component of the selected remedies for these two OUs?

Response: No.

8. Please describe any notifications that you are aware of that were given to Navy personnel following signing of the RODs in 1996 stating that the use of groundwater from beneath OU NSC and OU A is restricted. Are you aware of any use of groundwater from beneath these two OUs?

Response: I am not aware of any use of groundwater from beneath OU A and OU NSC. I am not aware of any notifications given to Navy personnel stating that the use of groundwater from beneath OU A and OU NSC is restricted. A general statement on groundwater use restrictions could be institutionalized in the BNC Master Plan. The latest copy I have seen is dated August 1989.

9. Please describe any excavation activity of which you are aware that has breached the asphalt cap at either OU NSC or OU A since signing of the RODs in 1996. To the best of your knowledge, was a plan developed prior to excavation to address health and safety precautions and soil handling and disposal?

Response: I am not aware of any excavation activity in OU A and OU NSC since signing of the RODs in 1996.

10. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: I believe the on-going groundwater monitoring at in OU A and OU NSC has met the goals stated in the RODs. My assessment is based upon review of semi-annual groundwater monitoring reports and the RODs.

11. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: I am not aware of any community concerns associated with OU A and OU NSC.

12. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: No.

13. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: No.

14. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: I believe the overall IR process for OU B is proceeding well. I believe the focus on OU B (Marine) and combining dredging with the planned MIL-CON dredging was appropriate and extremely successful in reducing overall costs. I believe the contractors responsible for the dredging at OU B (Marine) have done an outstanding job.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 1 Interview – Navy Personnel

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Cindy L. O'Hare

Title: Operations Team Lead

Organization: NAVFACENGCOM, ENGFLDACT NW

Telephone: 360 396 0014

E-mail: oharecl@efanw.navfac.navy.mil

Address: 19917 7th Ave NE, Poulsbo WA 98370

Contact made by: Michael Meyer from URS Corp

Response type: E-mail

Date: May 10, 2002

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate "none" after "response."

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: I have been involved as the Lead EPM for BNC since late March 2001. Prior to that I was the RPM for OU A and OU NSC for a few weeks.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: I believe that the remedy is protective.

3. To the best of your knowledge, did the pavement improvements made within OU NSC and OU A effectively meet the goals stated in the RODs, namely to "reduce the potential for [chemicals of concern] to reach the groundwater" and "reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater"? **Yes** Has on-going pavement maintenance been timely and effective? **Yes** Please indicate the basis for your assessment of the paving improvements. **Review of documents and site visits.**

Response: See above.

4. To the best of your knowledge, did the storm drain cleaning and repairs at OU NSC effectively meet the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” **Yes** Has on-going storm drain maintenance been timely and effective? **I am not aware of any on going maintenance.** Please indicate the basis for your assessment of the storm drain cleaning and repairs. **Review of documents and site visits.**

Response: See above.

5. To the best of your knowledge, did the riprap and nearshore habitat enhancements at OU A effectively meet the ROD goals of “reduc[ing]the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” **Yes, although the enhancement of marine habitat is limited.** Please indicate the basis for your assessment of the riprap and nearshore habitat enhancements. **Review of documents and site visits.**

Response: See above.

6. To the best of your knowledge, what is the status of the Excavation Management Plan, the Petroleum Management Plan, and the Stormdrain Maintenance Plan for the Bremerton Naval Complex?

Response: The Excavation Management Plan is Draft awaiting the conclusion of the OU B ROD. The Petroleum Management Plan is Final and the recommendations are about to be implemented. I do not know the status of the Stormdrain Maintenance Plan.

7. Following signing of the Record of Decision (ROD) for OU NSC and OU A in 1996, are you aware of any land use or ownership changes that you believe may impact the effectiveness of any component of the selected remedies for these two OUs?

Response: No.

8. Please describe any notifications that you are aware of that were given to Navy personnel following signing of the RODs in 1996 stating that the use of groundwater from beneath OU NSC and OU A is restricted. Are you aware of any use of groundwater from beneath these two OUs?

Response: I am not sure about Navy notifications. I am not aware of any use of groundwater.

9. Please describe any excavation activity of which you are aware that has breached the asphalt cap at either OU NSC or OU A since signing of the RODs in 1996. To the best of your knowledge, was a plan developed prior to excavation to address health and safety precautions and soil handling and disposal?

Response: At OU NSC, the asphalt was breached as part of the Pier D work. I am not sure if a plan was developed.

10. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: Yes. Review of documents.

11. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: I believe that the Suquamish Tribe still believes that the habitat enhancements were not sufficient. I know of no other community concerns. I live in the general area, and have not read of any concerns in the Bremerton Sun.

12. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: No.

13. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: No to all.

14. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: I believe that the selected marine remedies and the draft proposed remedies will be protective, implementable, and cost effective.

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 1 Interview – Navy Personnel

Bremerton Naval Complex

Bremerton, WA

Individual Contacted: Thomas Hughes
Title: Remedial Project Manager
Organization: EFA NW
Telephone: 360 396-0015
E-mail: Hughesta@efanw.navfac.navy.mil
Address: 19917 7th Ave. NE, Poulsbo, WA 98370-7570

Contact made by:
Response type: e-mail
Date: 5/2/02

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response: I have been the RPM responsible for implementing Long Term Monitoring at OU A and OU NSC for about one year.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response: The remedies at OU A and OU NSC can be looked at as 1) physically separating humans and the environment from contaminants and 2) a series of planned actions to ensure that the physical separation remains in place for the foreseeable future. The planned actions include maintenance, periodic inspections, and institutionalizing controls on excavation, groundwater use and access. The physical separation appears to be complete and functioning. Maintenance and inspections are being performed, but procedures still need improvement. The institutional controls are not final, in part because of the undetermined impact of the OU B ROD's.

3. To the best of your knowledge, did the pavement improvements made within OU NSC and OU A effectively meet the goals stated in the RODs, including paving unpaved areas, reducing ponding, and repairing existing pavement? Has on-going pavement maintenance been timely and effective? Please indicate the basis for your assessment of the paving improvements.

Response: Based on discussions with prior RPM's and yesterday's site visit, the pavement improvements keep workers and other visitors to the site isolated from contaminated site soils, and reduce water infiltration. Ongoing maintenance appears to have been timely and effective.

4. To the best of your knowledge, did the storm drain cleaning and repairs at OU NSC effectively meet the goals of the ROD? Has on-going storm drain maintenance been timely and effective? Please indicate the basis for your assessment of the storm drain cleaning and repairs.

Response: The storm drain cleaning and repairs appear to effectively meet the goals of the ROD. I am not aware that subsequent maintenance has been required. Reports on the initial repairs and cleaning, discussions and reports on the second phase.

5. To the best of your knowledge, did the riprap and nearshore habitat enhancements at OU A effectively meet the goals of the ROD? Please indicate the basis for your assessment of the riprap and nearshore habitat enhancements.

Response: Riprap was intended to minimize erosion of contaminated fill into Sinclair Inlet. Appears to be working.

6. To the best of your knowledge, what is the status of the Excavation Management Plan, the Petroleum Management Plan, and the Stormdrain Maintenance Plan for the Bremerton Naval Complex?

Response: The Excavation Management Plan is in draft form as Appendix A to the Institutional Control Inspection and Maintenance Plan (ICIMP). The Petroleum Management Plan has been finalized. The Storm drain Maintenance Plan is incorporated into the ICIMP.

7. Following signing of the Record of Decision (ROD) for OU NSC and OU A in 1996, are you aware of any land use or ownership changes that you believe may impact the effectiveness of any component of the selected remedies for these two OUs?

Response: NO

8. Please describe any notifications that you are aware of that were given to Navy personnel following signing of the RODs in 1996 stating that the use of groundwater from beneath OU NSC and OU A is restricted. Are you aware of any use of groundwater from beneath these two OUs?

Response: No and No.

9. Please describe any excavation activity of which you are aware that has breached the asphalt cap at either OU NSC or OU A since signing of the RODs in 1996. To the best of your knowledge, was a plan developed prior to excavation to address health and safety precautions and soil handling and disposal?

Response: Pier D Expansion breached the cap in OU NSC. There have been a number of pavement cuts related to utility work. I don't know.

10. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: I believe so.

11. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: None.

12. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: No.

13. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: None.

14. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is

not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: None

INTERVIEW RECORD FOR FIVE-YEAR REVIEW

Type 1 Interview – Navy Personnel

Bremerton Naval Complex

Bremerton, WA

Individual Contacted:	Rod Gross
Title:	Civil/Environmental Engineer
Organization:	U.S. Navy, Engineering Field Activity, Northwest
Telephone:	(360) 396-0208
E-mail:	grossrd@efanw.navfac.navy.mil
Address:	Engineering Field Activity, Northwest Naval Facilities Engineering Command 19917 7th Ave, N.E. Poulsbo, WA 98370-7570
Contact made by:	M. Meyers
Response type:	Email
Date:	02 May 2002

Summary of Communication

You are not obligated to answer every question. If you are not familiar with the topic of a particular question, or have no information or opinion to offer, please indicate “none” after “response.”

1. Please describe your degree of familiarity with the Bremerton Naval Complex, the RODs for OU NSC and OU A, the implementation of the remedies at these OU's, and the monitoring and maintenance that has taken place since implementation of the remedies.

Response:

I am fairly familiar with the complex. I worked there as a civil service employee from 1990-1993, and in 1998. I also currently work for EFA NW on PSNS/BNC projects. I am an RPM for the OUB Marine, OUC, IR sites, and I have a RCRA closure project near the west end of the Naval Station.

2. What is your overall impression of the remedy implementation (following signing of the RODs) at OU NSC and OUA?

Response:

I think the three part remedy is adequate and appropriate.

3. To the best of your knowledge, did the pavement improvements made within OU NSC and OU A effectively meet the goals stated in the RODs, namely to “reduce the potential for [chemicals of concern] to reach the groundwater” and “reduce human exposure to the chemicals of concern and to reduce or control contamination of groundwater”? Has on-going pavement maintenance been timely and effective? Please indicate the basis for your assessment of the paving improvements.

Response:

To the best of my knowledge, which is based on projects in the general areas of OUA, and test/samplings in the area, the OU NSC and OU A pavement improvements are effectively meeting their goals as stated in the RODs. It’s my belief that the potential for [chemicals of concern (coc’s)] to reach the groundwater has been significantly reduced, there has been a reduction in human exposure to coc’s, and a reduction in contamination of the groundwater has occurred in the vicinity of OUA and OU NSC.

I don’t have knowledge regarding paving maintenance in the areas of OUA and OU NSC.

4. To the best of your knowledge, did the storm drain cleaning and repairs at OU NSC effectively meet the ROD goal of “[reducing] the potential for chemicals of concern to be discharged to Sinclair Inlet?” Has on-going storm drain maintenance been timely and effective? Please indicate the basis for your assessment of the storm drain cleaning and repairs.

Response: To the best of my knowledge the storm drain cleaning and repairs at OU NSC effectively meet the ROD goal of reducing the potential for coc’s to reach Sinclair inlet. The Final Record of Decision, BNC OU B Marine has information regarding coc’s in the Sinclair inlet. There is no influx of contamination to the inlet due to OU NSC to the best of my knowledge.

I have not assessed the storm drain cleaning and repair program for OU NSC.

5. To the best of your knowledge, did the riprap and nearshore habitat enhancements at OU A effectively meet the ROD goals of “reduc[ing]the physical hazards associated with the existing riprap, such as exposed scrap metal, construction debris, and fill materials; limit[ing] erosion of heavy metal and organic constituents in fill materials to Sinclair Inlet marine waters; and enhancing terrestrial and marine habitat?” Please indicate the basis for your assessment of the riprap and nearshore habitat enhancements.

Response: I recently completed the Charleston Beach renovation project (4/02), and late in 2001 another beach enhancement was completed to the

beach just to the east of Charleston Beach. I believe those enhancements, together with the nearshore beach enhancements and shoring in the vicinity of the PSNS piers are proving to be highly effective measures in reducing physical hazards due to exposed metal, etc.

6. To the best of your knowledge, what is the status of the Excavation Management Plan, the Petroleum Management Plan, and the Stormdrain Maintenance Plan for the Bremerton Naval Complex?

Response: I have no knowledge of the status of those three plans.

7. Following signing of the Record of Decision (ROD) for OU NSC and OU A in 1996, are you aware of any land use or ownership changes that you believe may impact the effectiveness of any component of the selected remedies for these two OUs?

Response: No.

8. Please describe any notifications that you are aware of that were given to Navy personnel following signing of the RODs in 1996 stating that the use of groundwater from beneath OU NSC and OU A is restricted. Are you aware of any use of groundwater from beneath these two OUs?

Response: No.

9. Please describe any excavation activity of which you are aware that has breached the asphalt cap at either OU NSC or OU A since signing of the RODs in 1996. To the best of your knowledge, was a plan developed prior to excavation to address health and safety precautions and soil handling and disposal?

Response: I'm aware of no such excavation activity.

10. To the best of your knowledge, has the on-going program of environmental monitoring at OU NSC and OU A following implementation of the remedy been sufficiently thorough and frequent to meet the goals of the RODs? Please indicate the basis for your assessment of the environmental monitoring following implementation of the remedy.

Response: To the best of my knowledge the OU A and OU NSC remedies have been very effective in meeting the goals of their ROD. My assessment is based on working on projects in the vicinity of those OU's. I have seen no evidence of new or existing contamination entering the groundwater, or waters of Sinclair inlet due to a problem with the remedies implemented for those two OU's.

11. Are you aware of any community concerns regarding implementation of the remedies at OU NSC or OU A? If so, please give details.

Response: No.

12. Do you have any other comments, concerns, or suggestions regarding the effectiveness of the cleanup measures implemented so far in protecting human health and the environment at the Bremerton Naval Complex?

Response: No.

13. Please review the attached lists of interviewees and documents to be reviewed for the five-year review. Are there other individuals whom you feel that we should contact? If so, please provide their name, title, and telephone number. Are there other documents that you feel should be reviewed? If so, please list them.

Response: Possible interviews of Richard Brooks of the Suquamish Tribe, and Phyllis Meyers of NMFS (formerly of the Suquamish Tribe) might be helpful.

**Richard Brooks
Suquamish Tribe
Fisheries Department
PO Box 498, 15838 Sandy Hook Road
Suquamish, Washington, 98392-0498
(360) 394-5250**

**Phyllis Meyers
National Marine Fisheries Service
7600 Sand Point Way NE
BIN C15700, Bldg 1
Seattle, WA 98115
(206) 526-4506**

No other document review suggestions.

14. The remedy selection process for the terrestrial portion of OU B is currently underway. An interim ROD has been completed for the marine portion of OU B, and dredging has been completed. Although a final ROD for all of OU B is not complete, please provide your impressions of the remedy selection process at OU B (terrestrial) and the dredging at OU B (marine).

Response: The remedy selection process is not an easy one for OUB Terrestrial, however I think the process is going well. I agree with the proposed remedies and I think they are sufficient.

The OUB Marine CERCLA/Navigational Dredging project for the new aircraft carrier pier at PSNS was an unequivocal success. The Confined Aquatic Disposal (CAD) pit method was used for disposal of the unsuitable dredged material, and the suitable material was shipped to the Elliott Bay dredged disposal site. The CAD pit was covered with sand and native materials in precise fashion, and the long term monitoring program for the navy exclusion zone of the inlet is being developed. The enhanced natural attenuation has begun and will be monitored over the next several years. The Remedial Action Report (RAR) for the project will be completed approximately June 2002.



Telephone Conversation Record

Date: April 22, 2002

Party Called: Rick Metzger

Phone Number:

Company/Agency: Puget Sound Naval Shipyard Security

Conversation with: Michael Meyer

Job Number: 53-F0074100.17

Subject: Five-year review interview form

Notes:

Mr. Metzger called because he received the 5-year review interview form, but doesn't really understand what is wanted. He said he wasn't even familiar with the acronyms (ROD, OU, etc.). Michael explained why security information was relevant to the 5-year review, and explained the review process and requirements in general. Mr. Metzger was very helpful, but believed that he could not really respond to the questions on the interview form. Instead, discussed security procedures and records in general.

Mr. Metzger has a five-year history at the BNC and is responsible for security at the shipyard (within the CIA). Thad Johnson is responsible for security at Naval Station Bremerton and should also be contacted. Access incidents are reported by the police on "ICRs," incident contact reports. These reports are categorized and computerized. Can easily request a "trespass" category report through Thad Johnson. Should contact Thad through EFA NW. Could then review report for incidents that could be relevant to protection of human health and the environment. Mr. Metzger believed that what we would find was that most trespass incidents involved a seaman bringing someone on base who then ended up wandering around alone somewhere where they shouldn't be.

General procedures:

CIA requires badge. Naval station can be accessed by a larger population, but not general public. Family members, retired Navy personnel, etc. can access just with ID cards (not a base-specific badge). OU A is accessible to general public, but is patrolled by roving security patrols. These roving patrols prevent activities such as fishing, swimming, or beach combing. By Federal law, the entire waterway is restricted. An aggressive security boat quickly meets any boat that violates the restricted area.

Signed:

cc:

A handwritten signature in black ink, appearing to read 'Michael Meyer', written over a horizontal line.

Email from Thad Johnson (CNRNW) to Tom Hughes of EFA NW on May 15, 2002

Mr. Hughes,

IRT to request for information on "trespass" incidents, the following is provided:

1998- Records do not go back this far

1999- 3 incidents. 2 badge violations of service members headed to ships in the CIA, and 1 person trespassed in the Navy Exchange.

2000- 6 incidents. 2 trespassed into our Gym. 1 attempt onto a ship at Pier D. 2 badge violations into the CIA. 1 civilian onto Camp McKean.

2001- 5 incidents. 1 service members over fence into CIA. 1 service members over fence of NSB. 1 badge violation into CIA. 1 person into our BEQ. 1 person into Jackson Park family housing.

2002- 1 so far. A person into Jackson Park family housing.

As you can see, our records have used "trespass" rather liberally (badge violations, etc.), but our records do not reveal any trespass situations that appear to meet the intent of interview question. Those into Jackson Park were for the purpose of visiting or harassing residents there, and did not in any way involve the UXO issues out there.

Hope this information serves the purpose for you.

r/

Thad A. Johnson
Navy Region Northwest
Bremerton Police Precinct Commander
360 476-8753
johnson.thad@pacnw.navy.mil